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Parents' Perceptions of Their Spouses' Parenting and Infant Temperament as Predictors of Coparenting Quality

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Parents' Perceptions of Their Spouses' Parenting and Infant Temperament as Predictors of Coparenting Quality

by

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Dedication

This dissertation is dedicated to my parents for showing me a great example of child-centered coparenting throughout my life.

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Parents' Perceptions of Their Spouses' Parenting and Infant Temperament as Predictors of Coparenting Quality

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The quality of the marital relationship across the transition to parenthood, in conjunction with the quality of infant temperament, have been found to predict coparenting quality, but little is known about how each parent's perceptions of the other's parenting qualities interact with their infant's temperament during the first two years to predict parents' later individual and dyadic coparenting behaviors. The present study explored this using data on family functioning and child outcomes from a longitudinal study collected on 125 families in central Texas over their first two years of parenthood. After each child's birth, ratings of infants' temperament were obtained from parents when infants were 6 weeks old. Each parents' perceptions of their spouse's parenting were coded from a videotaped couple interaction task obtained when infants were 8 months old, and parents' individual and dyadic coparenting behaviors were coded from videotaped whole-family interactions obtained when infants were 24 months old. Mothers' and fathers' perceptions of their spouse's parenting at 8 months interacted with their infants' temperament to predict their later warmth in coparenting, as well as their dyadic child-centered and cooperative coparenting. Specifically, higher maternal perceptions of fathers' parenting predicted high levels of father warmth and higher levels of dyadic child-centered coparenting when infant temperamental reactivity was high. In contrast, higher paternal perceptions of mothers'

parenting predicted higher levels of mother warmth and higher dyadic child-centered and cooperative coparenting when infant temperamental reactivity was low. Parents' individual warmth, involvement, and support were also associated with their dyadic coparenting behaviors. This study should help family systems researchers further understand how parents' attitudes toward each other's parenting interact with their infants' temperament qualities across the transition to parenthood to influence their later functioning as coparents.

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Introduction

As spouses become new parents, they enter a dyadic "coparenting alliance" in their efforts to work together to raise their child (Gable, Crnic, & Belsky, 1994), defined here as parents working together either cooperatively or competitively. If, instead, one parent is making nearly all of the parenting decisions, then the couple is engaging in low levels of coparenting. In this transition to parenthood, parents must learn to collaborate and manage childcare tasks to meet the needs of their new child, including their child's temperamental needs. During this process, parents also develop perceptions about the abilities of their partner to care for their child. These perceptions are likely to influence the quality of how well they work together as coparents, as well as their individual parenting behaviors during coparenting interactions.

Whereas prior research has focused on changes in marital quality over the transition to parenthood as predictors of later coparenting quality (Christopher, Umemura, Mann, Jacobvitz, & Hazen, 2015), less is known about how parents' perceptions of each other's parenting quality across the first two years of parenthood might influence their later behaviors in coparenting, both individually and dyadically. The primary goal of this project is therefore to examine this issue. Given that poor coparenting quality has been associated with children's psychosocial problems (Teubert & Pinquart, 2010; Umemura, Christopher, Mann, Jacobvitz, & Hazen, 2015), whereas effective coparenting has been associated with positive child outcomes (e.g., prosocial behaviors; McHale, Johnson, & Sinclair, 1999), predictors of coparenting quality are important to understand.

Family systems theory provides a framework for understanding multiple types of interrelationships within the family unit, including coparenting (Cox & Paley, 2003; Minuchin, 1988). According to this theory, all members of a family unit mutually influence each other (Cox & Paley, 2003). Once an infant enters its family system, spouses establish a new relationship as coparents, and the individual qualities of the infant, particularly the infant's temperament, begin to influence each parent. Previous research has demonstrated that infant temperament interacts with parents' marital quality to predict coparenting quality (Schoppe-Sullivan, Mangelsdorf, Brown, & Sokolowski, 2007). However, less is known about how infant temperament interacts with parents' perceptions of each other's parenting to predict later coparenting quality.

Parents' Perceptions of Each Other's Parenting

A spouse's positive perceptions of their partner's parenting should relate to their partners' willingness to become involved, and to provide support to the spouse, in future coparenting endeavors, which should, in turn, contributing to future positive dyadic coparenting quality. In contrast, spouses' negative perceptions of their partner's parenting may predict undermining of the partner's parenting and low support in the coparenting process, which in turn may contribute to negative patterns of dyadic coparenting. Therefore, the primary goal of this study is to examine how each spouse's perceptions of their partner's parenting relate to their own and their spouse's later behaviors in the context of coparenting.

Family systems theory suggests that within the family system, each subsystem (e.g., parent-parent, parent-child, whole family) functions uniquely and also has the

potential to influence and be influenced by the other subsystems (Cox & Paley, 2003). In addition, interdependence theory emphasizes the importance of social exchanges between partners in a dyad, as one partner's emotions, actions, and cognitions influence those of their partner (Kelly et al., 2003; Kelly & Thibaut, 1978). Therefore, partners' perceptions of their relationship quality are likely to be interdependent (Cook & Kenny, 2005). Although coparenting is an intrinsically dyadic construct, mothers' and fathers' differential perceptions within the context of coparenting are likely to mutually influence each other, and as noted above, these patterns of influence may affect individual behaviors such as parental involvement, support, and warmth during coparenting, thereby influencing the quality of dyadic coparenting quality (McHale & Lindahl, 2011).

Prior research has supported the idea that parents' perceptions of each other's parenting are likely to be interdependent. In one of the few studies that examined parents' perceptions of each other's parenting following the transition to parenthood (Sasaki, Hazen, & Swann, 2010), results indicated that mothers' and fathers' perceptions of each others' parenting were highly positively correlated, and that mothers' perceptions of fathers' parenting were associated with fathers' parenting self-competence (Sasaki et al., 2010). The relation between mothers' perceptions of fathers' parenting and fathers' parenting competence is likely bidirectional, as mothers with a positive opinion of fathers' parenting may be more inclined to let fathers take initiative in caregiving tasks, and father involvement in caregiving can lead to fathers' increased sense of parenting competence.

Coparenting research conducted in recent years suggests that there are likely to be gender differences in the ways that mothers' and fathers' perceptions of each others' parenting relate to each others' parenting and coparenting. Although mothers have shown dramatic increases in their employment over the past few decades and fathers' involvement in parenting of young children has risen accordingly (McWayne, Downer, Campos, & Harris, 2013), contemporary research indicates that mothers are still significantly more involved in childcare tasks than fathers and are still seen as the primary caregivers of young children (Kotila, Schoppe-Sullivan, & Kamp Dush, 2013). Consequentially, compared to fathers, mothers have been found to be less supportive of and more undermining of fathers' parenting decisions and actions, a phenomenon known as "maternal gatekeeping" (e.g., Schoppe-Sullivan et al., 2008, Schoppe-Sullivan, Altenburger, Lee, Bower, & Kamp Dush, 2015). Maternal criticism of fathers, coupled with fathers' beliefs about their own role as a parent, has been associated with lower paternal involvement with their infants (Schoppe-Sullivan et al., 2008). In addition, fathers with lower parenting self-efficacy elicit greater maternal gate-closing behavior (Schoppe-Sullivan et al., 2015). In contrast, mothers' encouraging support of fathers is associated with greater father involvement (Schoppe-Sullivan et al., 2008), which is in turn associated with an increase in supportive coparenting (also called cooperative coparenting) and a decrease in undermining coparenting (also called competitive coparenting) (Jia & Schoppe-Sullivan, 2011).

Research on maternal gatekeeping demonstrates that mothers' influence on fathers may differ from fathers' influence on mothers (Schoppe-Sullivan et al., 2015).

Maternal involvement in caregiving is generally high regardless of marital quality, paternal involvement, or paternal support (Coltrane & Shih, 2009; Ehrenberg, Gearing-Small, Hunter, & Small, 2001), whereas father involvement in coparenting has been found to be highly dependent on maternal support (e.g., Waller, 2012), indicating that fathers have less influence on mothers' parenting than mothers do on fathers' parenting. For instance, observations of coparenting interactions have indicated that mother's greater behavioral support of the father's parenting decisions during coparenting interactions was related to fathers' greater involvement in coparenting, which in turn predicts more cooperative coparenting (Murphy et al., 2017). In contrast, fathers' support of mothers was unrelated to mothers' coparenting involvement, although it did predict more cooperative coparenting. The present study will examine whether a similar pattern of gender differences is found when examining parent's perceptions of each other's parenting (rather than parents' behavioral support) as predictors of each parents' individual and dyadic behaviors in the context of coparenting.

Infant Temperament

The infants' temperament is considered to be a heritable trait that is reflected in individual differences in infants' self-regulation and reactivity in areas such as activity, affect, and attention (Rothbart & Bates, 2006). Infant temperament is the earliest manifestation of a child's personality and sets the stage for the individual's later personality development and social functioning. According to family systems theory, as soon as an infant is born, he or she becomes a part of the family system and influences all

of the individuals and relationships within that system. Thus, an infant's temperament should influence the quality of a family system, including coparenting quality.

In general, research has found that when infants are easily soothable and adaptable, they elicit warmer and more sensitive, responsive parenting, whereas infants who are difficult to soothe and highly reactive are more likely to elicit parental frustration, less warmth, and less sensitivity (Hinde, 1989; Kyrios & Prior, 1990, Putnam, Sanson, & Rothbart, 2002). Coparenting behaviors should also be associated with child temperament, given that child temperament is a strong predictor of parenting quality (Bridgett et al., 2009). Some studies have found that parents' perceptions of greater infant reactivity is related to poorer coparenting quality, at least for fathers (Laxman et al., 2013; van Egeren, 2004). Similarly, fathers have demonstrated more intrusive coparenting when their infants were reported to be temperamentally reactive (Lindsey, Caldera, & Coldwell, 2005).

However, most studies examining the relation of infant temperament to coparenting have not found simple, direct relationships between these two factors. Rather, temperament was found to relate to coparenting only when interacting with other factors. For example, in one study, infant reactive temperament was associated with reduced coparenting quality only if additional stressors were present (e.g., infant soothability, dissatisfaction with division of parenting tasks), and moreover, the nature of the stressors differed for mothers and fathers (Burney & Leerkes, 2010). Specifically, mothers who perceived their infants as high in reactivity reported more negative

coparenting only if they were dissatisfied with how parenting tasks were divided or if their infants were also not easily soothed.

Other studies found that associations between infant temperament and coparenting behavior depended on marital quality. For example, in one study, fathers who perceived their infants as highly reactive reported more negative coparenting only if they also reported a low quality marital relationship (Burney & Leerkes, 2010). In another study, couples with low marital quality demonstrated less optimal coparenting behavior when caring for an infant with a more reactive and challenging temperament, but interestingly, couples with high marital quality demonstrated *more optimal* coparenting behavior when their infant was more temperamentally challenging (Schoppe-Sullivan et al., 2007). The researchers inferred that when parents share a positive preexisting marital bond, they may be better able and more motivated to work together when required to care for a more challenging infant. On the other hand, if parents have a positive preexisting marital bond but have an infant who is less challenging, they may not need to work together as much to care for their child. Thus, it seems likely infant temperament should modify the relations between parents' perceptions of each other's parenting and each parents' individual involvement, support, and warmth during coparenting behaviors.

Thus, in the present study, I examine the influence of each parents' perceptions of their spouse's parenting over the transition to parenthood, moderated by infant temperament, as predictors of their spouse's individual behaviors during coparenting (partner effects). I anticipate that parents' perceptions of their spouse's parenting will act

as an endorsing factor in promoting spouses' individual involvement, support, and warmth in coparenting (i.e., partner effects). I also expect mothers' perceptions of fathers' parenting to have a greater impact on fathers' behaviors during coparenting, than fathers' perceptions of mothers' parenting will have on mothers' behavior during coparenting, given that mothers are usually the primary caregivers of their children. The relation of each parents' perceptions of their spouse's parenting to their own individual behaviors during coparenting (i.e., actor effects) will also be examined on an exploratory basis.

Because infant temperament exerts an influence on parents' behaviors (Bridgett et al., 2009), I expect to find a significant main effect of infant temperament on later coparenting behaviors. However, because past research indicates that marital quality interacts with temperament to predict coparenting quality (Schoppe-Sullivan et al., 2007), I also hypothesize that main effects of both parents' perceptions and infant temperament on coparenting will be qualified by interactions of parents' perceptions with infant temperament in predicting individual and dyadic coparenting behaviors.

However, the nature of these interactions is difficult to anticipate based on existing research and will therefore be examined on an exploratory basis. On the one hand, based on past research indicating that a more reactive infant temperament is related to less sensitive parenting behaviors (e.g., Putnam et al., 2002), it may be that the lowest quality of individual coparenting behaviors (low involvement, support, and warmth) will be predicted by infants' higher temperamental reactivity in combination with being perceived more negatively by the spouse. On the other hand, based on the findings of

Burney & Leerkes (2010) and Schoppe-Sullivan et al. (2007), if a parent is perceived more negatively by their spouse, they may show less optimal individual coparenting behavior when caring for an infant with a more reactive, challenging temperament, but if perceived more positively by the spouse, parents may show *more optimal* individual coparenting behavior when their infant is more challenging. It is also possible that one pattern of findings will be more likely for fathers' perceptions of mothers, while the other will be more likely for mothers' perceptions of fathers.

Individual Behaviors During Coparenting

It is particularly important to examine parents' behaviors within the context of coparenting soon after the transition to parenthood, since the early establishment of coparenting patterns is likely to set the stage for the coparenting relationship, and coparenting quality has been found to be a significant predictor of child outcomes (e.g., externalizing problems; Schoppe, Mangelsdorf, & Frosh, 2001). Although coparenting is defined as dyadic construct (i.e., involving how a mother and a father as a couple parent their child), recent research has also begun to examine how qualities of each parents' individual contributions to coparenting contribute to their dyadic coparenting qualities (e.g., Murphy et al., 2017). Such examinations are important, as this research demonstrates how parents each contribute differently on an individual level to the dyadic-level construct of coparenting. Although marital quality over the transition to parenthood has been found predict later coparenting quality (e.g., Christopher et al., 2015), less is known about each parent's perceptions of the other's parenting qualities might affect their later coparenting. Thus, the primary aim of the present study is to test the central

hypothesis that mothers' and fathers' earlier perceptions of their spouse's parenting will interact with their infant's temperament to predict their spouse's later individual involvement, support, and warmth in the coparenting context, which will in turn influence the couples' dyadic coparenting quality. That is, the relation between parents' perceptions of their spouse's parenting, modified by infant temperament, to the couples' dyadic coparenting quality will be mediated by parents' individual behaviors involvement, warmth, and support, during coparenting. I anticipate that these individual behaviors will be associated with two common dyadic coparenting outcomes – competitive and cooperative behaviors – and one understudied coparenting outcome – child-centered coparenting.

Parental involvement in coparenting. Parental *involvement* is traditionally defined in terms of *quantity*—that is, the amount of time each parent spends with their child, or in this case, the extent to which each parent makes decisions or takes action concerning the parenting of the child within the context of coparenting. That is, parents who are highly involved in coparenting make a large proportion of the parenting decisions during coparenting, either individually or jointly with their spouse, whereas parents who are low in involvement leave most or all of the parental decision-making to their spouse.

Higher (i.e., more positive) perceptions by parents of their spouse's parenting should be predictive of each spouse's involvement in coparenting, since the spouses should feel more supported in their parenting. This is likely especially true for fathers. Past research has found that mothers' behavioral support of fathers during the

coparenting process is related to fathers' greater involvement in parenting decisions in the context of coparenting (Murphy et al., 2017; Waller, 2012). Also, fathers were found to be more likely to withdraw from parenting interactions if their earlier marital quality (i.e., before childbirth) with their spouse was negative (Gallegos, Murphy, Benner, Jacobvitz, & Hazen, 2017).

In contrast, since mothers are likely to assume most of the child care responsibilities during children's early years (Kotila et al., 2013), their individual level of involvement in parental decision-making during coparenting is likely to remain high regardless of their husbands' opinion of their parenting quality. It is also possible that if a parent, especially a father, thinks that their spouse's parenting is highly competent, then perhaps that parent might engage in less coparenting and leave the parenting tasks to their more competent spouse. Nonetheless, infant temperament is also expected to moderate the relation between parents' perceptions of their spouse's parenting and their involvement in coparenting. For instance, fathers may show higher levels of involvement in coparenting when their spouse has a positive perception of their parenting and their infant has an easygoing non-reactive temperament. On the other hand, when the infant has a more challenging temperament, fathers who were perceived more positively as parents by their wives may be more likely to step in and become involved, since they may feel they are more needed to help with a more challenging child, as well as more capable.

Parental support of their partner in coparenting. *Support* in coparenting reflects the extent to which a spouse demonstrates behaviors promoting the other parent's

actions and goals in the context of coparenting. Research has repeatedly demonstrated the importance of support in marital relationships and in coparenting (Gleason & Iida, 2015; Schoppe-Sullivan, Brown, Cannon, Mangelsdorf, & Sokolowski, 2008). As mentioned previously, several studies indicate that mothers' support of the father in the context of coparenting is associated with fathers' greater involvement in coparenting decisions (Murphy, et al., 2017; Schoppe-Sullivan et al., 2008; Waller, 2012). Mothers' lower support of fathers in coparenting is also associated with higher levels of competitive coparenting, while father support in coparenting is positively associated with dyadic cooperative coparenting (Murphy et al., 2017). Previous research has also demonstrated that that declines in mothers' reports of marital quality across the transition to parenthood predicts lower support of their husbands during coparenting interactions (Christopher et al., 2015). On the other hand, fathers' play with their young children relates to greater support and lower undermining within the coparenting relationship (Jia & Schoppe-Sullivan, 2011).

I anticipate that each spouse's higher perceptions of their partner's parenting will predict their greater support of the spouse during coparenting, which in turn will relate to positive dyadic coparenting outcomes. Again, this may be particularly true for mothers' perceptions of fathers, although fathers' more positive perceptions of mothers' parenting are also expected to predict mothers providing more support to fathers during coparenting. Infant temperament is also expected to moderate the relation between parents' perceptions of their spouse's parenting and their support in coparenting. Again, however, it is not clear whether parents who had been perceived positively by their

spouse will be more likely to offer support when the child is more easygoing (and therefore possibly more pleasant to interact with) or when the child is more challenging (and mutual support may be more needed).

Parent-to-child warmth in coparenting. Parent-to-child *warmth* reflects a positive, sensitive, receptive, and supportive *quality* of a parent's emotional involvement and engagement with their child (e.g., Grusec, 2011). Warm, sensitive, and invested parenting has often been associated with positive child outcomes (e.g., Fosco & Grych, 2013; Hazen, McFarland, Jacobvitz, & Boyd-Soisson, 2010). For example, mothers' warm and sensitive behavior is associated with higher ratings of child emotion regulation (Fosco & Grych, 2013). Fathers' involvement in stimulating but sensitive play with their infants has also been related to toddlers' ability to appropriately regulate their emotions (Hazen et al., 2010). On the other hand, fathers' greater emotional withdrawal from their infants (versus engagement) has been associated with children's less adaptive emotion regulation (Gallegos et al., 2017), which is also associated with later child internalizing problems (Eisenberg et al., 2001). Fathers' (but not mothers') withdrawal during coparenting is also associated with greater disengagement and less warmth during triadic (i.e., mother-father-child) interactions and with fathers' feelings that mothers do not respect their parenting (Elliston, McHale, Talbot, Parmley, & Kuersten-Hogan, 2008). Warmth in the mother-child, father-child, and coparenting relationship are negatively associated with child internalizing problems for children after controlling for family stress (Kolak & Vernon-Feagans, 2008).

Little is known about whether and how each parents' perceptions of their spouses' coparenting may affect their spouse's warmth toward the child in the context of coparenting interactions, or about how the temperament of the child may moderate this relationship. Individual parent-to-child warmth in the context of coparenting has been understudied when compared to individual parent involvement and support in coparenting. However, individual parent-to-child warmth may be an even more important predictor of coparenting quality – especially dyadic child-centered coparenting – than individual parent involvement in coparenting. Warmth reflects an important quality of parental investment towards children (e.g., Grusec, 2011). Warmth is also an important factor in the whole-family context, as it is reflected in family security, an important factor in positive child developmental outcomes (Cummings & Davies, 1994).

In the present study, I expect that higher parents' perceptions of their spouses' parenting will act as an endorsing factor promoting the spouses' parent-to-child warmth in coparenting. This endorsement is expected to be higher for mothers' perceptions of fathers' parenting being associated with fathers' parent-to-child warmth, since mothers have repeated been found to have a greater influence on fathers' parenting than fathers' have on mothers' parenting, as previously mentioned. Infant temperament is also expected to moderate the relation between parents' perceptions of their spouse's parenting and their warmth in coparenting. For instance, parents may show greater warmth when having a spouse with a positive perception of their parenting and an infant with an easy-going temperament. In the case of warmth, it seems less likely that even for a positively-perceived parent, having an infant with a more challenging temperament

would be predictive of higher warmth, but again, it is unclear what form the interaction might take.

In addition, high warmth by both spouses towards their child is expected to be associated with higher ratings of child-centered coparenting, since both parents show a high quality of sensitivity and responsiveness to the child's needs. High warmth by both spouses towards their child should also predict higher cooperative and lower competitive coparenting, since if both parents are warm in their interactions with their child, they will be more motivated to work together more cooperatively and with less competition for the child's benefit.

Dyadic Coparenting Quality

Coparenting has been characterized as the intersection between the marital and parent-child relationship in the family system (Cowan & Cowan, 2002; McHale & Sullivan, 2008; Schoppe-Sullivan, Mangelsdorf, Frosch, & McHale, 2004). Van Egeren and Hawkins (2004) described a coparenting relationship as one that exists, "… when at least two individuals are expected by mutual agreement or societal norms to have conjoint responsibility for a particular child's well-being." (p. 166). Researchers have identified several factors related to coparenting quality, including each spouses' support/undermining of the other, joint family management, child-rearing agreement/disagreement, division of labor (Feinberg, 2003), coparenting solidarity, and shared parenting (van Egeren & Hawkins, 2004). Two factors that have emerged as particularly significant characterizations of coparenting quality from both theoretically-driven (Feinberg, 2003) and methodologically-driven conceptualizations (van Egeren &

Hawkins, 2004) are mutual support/cooperation (referred to as *cooperative* coparenting), versus antagonism/undermining of one parent by the other (referred to as *competitive* coparenting; Kotila & Schoppe-Sullivan, 2015; McHale, 1995; Teubert & Pinquart, 2009, 2010).

Competitive coparenting refers to the ways in which parents compete with each other for control over their child while undermining each other's authority (McHale, 1995). On the other hand, *cooperative* coparenting refers to the ways in which parents assist, support, or complement each others' parenting (McHale, 1995). Competitive and cooperative coparenting are theoretically orthogonal constructs and not just opposing ends of a single dimension of coparenting, as some couples can be low on both constructs if one parent makes nearly all of the parenting decisions, while some couples who frequently work together may be high on both constructs (McHale, Kuersten-Hogan, & Lauretti, 2000). In addition, a couple could demonstrate both types of dyadic coparenting in different contexts or situations. For instance, in one scenario, a couple could be cooperating when playing a game with their child, but showing competitive behaviors when changing their child's diaper.

Competitive coparenting has been found to predict negative child outcomes, including internalizing (Kolak & Vernon-Feagans, 2008) and externalizing problems (Johnson, Cowan, & Cowan, 1999), even after controlling for marital quality. Independent of cooperative coparenting and each parents' individual harsh parenting, competitive coparenting has also been found to predict children's symptoms of attention-deficit/hyperactive disorder (ADHD) and oppositional defiant disorder (ODD; Umemura

et al., 2015). In addition, competitive coparenting between parents has been found to predict children's externalizing symptoms at age 7, even when controlling for low cooperative coparenting, negative affectivity between parents, and family conflict (Murphy, Hazen, & Jacobvitz, 2016). On the other hand, parents' cooperative coparenting has been found to predict positive child outcomes, such as prosocial behavior (McHale et al., 1999).

Whereas competitive and cooperative coparenting reflect the parent-parent relationship quality, less is known about *child-centered* coparenting, that is, the extent to which the parents as a team are focused on understanding and being sensitive to the goals of their child, rather than being focused primarily on their own goals without understanding or empathizing with their child's motivations. Child-centered coparenting is characterized by the extent to which parents collaborate to prioritize understanding and supporting their child's needs and desires (McHale, Kuersten-Hogan, & Lauretti, 2000). Mother-child interactions that are more child-centered than parent-centered have been found to relate to more positive parent-child interactions and to beneficial child outcomes. For example, mothers who report child-centered goals for their children have been found to show fewer negative emotions and more supportive behavior towards their children (Dix, Gershoff, Meunier, & Miller, 2004), which in turn is related to child autonomy (Dix, Stewart, Gershoff, & Day, 2007). Although few studies have examined the relation of child-centered coparenting to child outcomes, one study found that coparenting hostility-competitiveness, a latent variable composed of child-centered coparenting (reverse-scored), competitive coparenting, and verbal sparring, was

positively correlated with boys' anxiety and internalizing and externalizing symptoms (McConnell & Kerig, 2002).

Child-centered family interactions have been found to be positively related to high levels of parental warmth and cooperation between parents (McHale, Kuersten-Hogan, Lauretti, & Rasmussen, 2000) and negatively related to competitive coparenting behaviors (Blandon, Scrimgeour, Stifter, & Buss, 2014). Surprisingly though, Blandon et al. (2014) also found that parents who are both *very* high in child-centered coparenting across multiple interaction tasks are less likely to show cooperative coparenting, perhaps because they let their child drive the triadic interactions, giving both parents fewer opportunities to demonstrate cooperative coparenting as a team. Thus, child-centered coparenting seems to be a distinct construct from both cooperative and competitive coparenting. Studies like this that examine child-centered coparenting assessed using observational measures are important, but more are needed.

Given the importance of cooperative, competitive, and child-centered parenting to family functioning and child outcomes, it is important to better understand predictors of each of these aspects of coparenting quality. Coparenting in family systems is characterized by multiple aspects of interrelationship functioning within the family, as it includes not only overt interactions occurring in the family, but also opinions or perceptions that may promote or undermine a partner's actions as a coparent (McHale, 1997). That is, parents are likely to have opinions about the coparenting relationship that can promote or undermine their partner in the form of direct or indirect comments, triangulating behaviors with their child, and inclusion/exclusion of the other parent in

activities (Margolin, Gordis, & John, 2001; McHale, 1997; Van Egeren & Hawkins, 2004). Parents' perceptions of each others' parenting might also relate to child-centered coparenting, as parents who perceive their spouse's parenting more positively might promote their spouse's spending more quality time with their child during coparenting, which in turn may help the spouse's understanding of their child's perspective. Therefore, it is important for family systems researchers to consider how both the perceptions and behaviors of mothers and fathers might influence the quality of their dyadic coparenting.

Infant temperament may also have both a main direct effect and an interactive direct effect (interacting with parents' perceptions of their spouse's parenting) on later dyadic coparenting. For instance, higher ratings of difficult infant temperament have been negatively associated with supportive dyadic coparenting (e.g., main effects) and also show an interactive effect with early undermining coparenting to predict later coparenting (Laxman et al., 2013). Specifically, parents who were low in undermining coparenting at 13 months post-childbirth showed lower ratings of undermining coparenting at 3 years when they had a child with a less difficult temperament (Laxman et al., 2013). In the present study, however, I am examining both parents' individual perceptions of their spouse's parenting and infant temperament, as well as the interaction between the two, to predict later dyadic coparenting. I am anticipating that high ratings of infant temperament reactivity (i.e., challenging behavior) will be associated with low ratings of dyadic cooperative and child-centered coparenting and with high ratings of competitive coparenting. I am also anticipating that infant temperament will interact with parents' perceptions to predict dyadic outcomes directly, as well as indirectly through

individual coparenting behaviors. The nature of these interactions will be examined on an exploratory basis.

Relation of Parents' Individual Behavior during Coparenting to their Dyadic Coparenting Quality

Involvement. Cooperative coparenting is, by definition, characterized by both parents' high mutual support and involvement (e.g., McHale, 1995). Therefore, higher father involvement (but not necessarily mother involvement) should be positively associated with cooperative dyadic coparenting outcomes. Mothers' involvement in coparenting is less likely to be related to coparenting quality (cooperative, competitive, or child-centered) since mothers are almost always highly involved in parenting regardless of fathers' perceptions or support (Bianchi, Robinson, & Milkie, 2006; Kotila et al., 2013). However, it is less clear how each fathers' involvement might related to competitive coparenting. Competitive coparenting has been repeatedly been linked with spouses' lower support and greater undermining (especially undermining of fathers by mothers; Murphy et al., 2017; Schoppe-Sullivan & Mangelsdorf, 2013; Waller, 2012).

However, it has not been linked to father involvement, perhaps because fathers may withdraw from coparenting if mothers are unsupportive. Some degree of mutual involvement in coparenting is necessary if competitive coparenting is to occur. The relation of parents' involvement in coparenting to child-centered coparenting is also unclear. Parents who are highly involved in shared parenting tasks should presumably demonstrate higher ratings of child-centered coparenting, given their high levels of attention to their child's needs. On the other hand, however, if both parents are highly

involved, they might be more likely to conflict if they differ in their parenting beliefs and practices.

Support. As mentioned earlier, cooperative coparenting is characterized by both parents' high mutual support (e.g., McHale, 1995). Previous research has demonstrated that fathers' support for their spouse is positively associated with cooperative coparenting (Murphy et al., 2017), whereas mothers' lower support for fathers is associated with greater competitive coparenting (Murphy et al., 2017, Schoppe-Sullivan & Mangelsdorf, 2013; Waller, 2012). Parents who are highly supportive of each other should also presumably demonstrate higher ratings of child-centered coparenting, given that their mutual support would presumably be extended into their dyadic care towards their child.

Warmth. Given the child-directed nature of parent-to-child warmth, parents who demonstrate high warmth in coparenting should presumably demonstrate lower amounts of competitive coparenting and higher amounts of cooperative and child-centered coparenting. Warmth should be negatively associated with competitive coparenting, as parents who display warmth towards their child while sharing caregiving activities with their partner should be less likely to jockey for control over caregiving tasks. In addition, when parents show warmth towards their child during dyadic caregiving, higher levels of warmth could also be a positive factor in promoting cooperation between parents. Higher individual parental warmth should also be associated with child-centered coparenting, given the child-oriented nature of parental warmth.

Overview of the Present Study

The present study is one of the first to utilize an actor-partner interdependence model (APIM; Cook & Kenny, 2005) to examine mothers' and fathers' perceptions of each other's parenting qualities in the first year of parenthood and how these perceptions predict their individual and shared dyadic behaviors in coparenting situations (see Figure 1 for Main Model 1). The main question guiding the research presented here is: how do mothers' and fathers' perceptions of their spouses' parenting and infant temperament together predict mothers' and fathers' individual behaviors in coparenting (i.e., involvement, support, parent-to-child warmth) and dyadic coparenting quality (i.e., competitive, cooperative, child-centered)? Predictors of dyadic competitive, cooperative, and child-centered coparenting will each be assessed in separate models with separate individual parent behaviors as mediators (i.e., involvement, support, parent-to-child warmth in coparenting). Thus, nine models will test the following hypotheses:

Hypothesis 1: More positive parental perceptions of spouses' parenting at 8 months will be associated with higher levels of their spouses' individual involvement, support, and parent-to-child warmth in coparenting at 24 months (Figure 1, partner effects – paths *a* and *b*). This prediction, however, may only apply to the relation of mothers' perceptions of fathers' behaviors (path *a*), since mothers have been shown in previous research to have a greater impact on fathers' parenting than do fathers' on mothers' parenting. Also, the effect for involvement might only apply to fathers' behaviors, since maternal involvement is usually high regardless of paternal support.

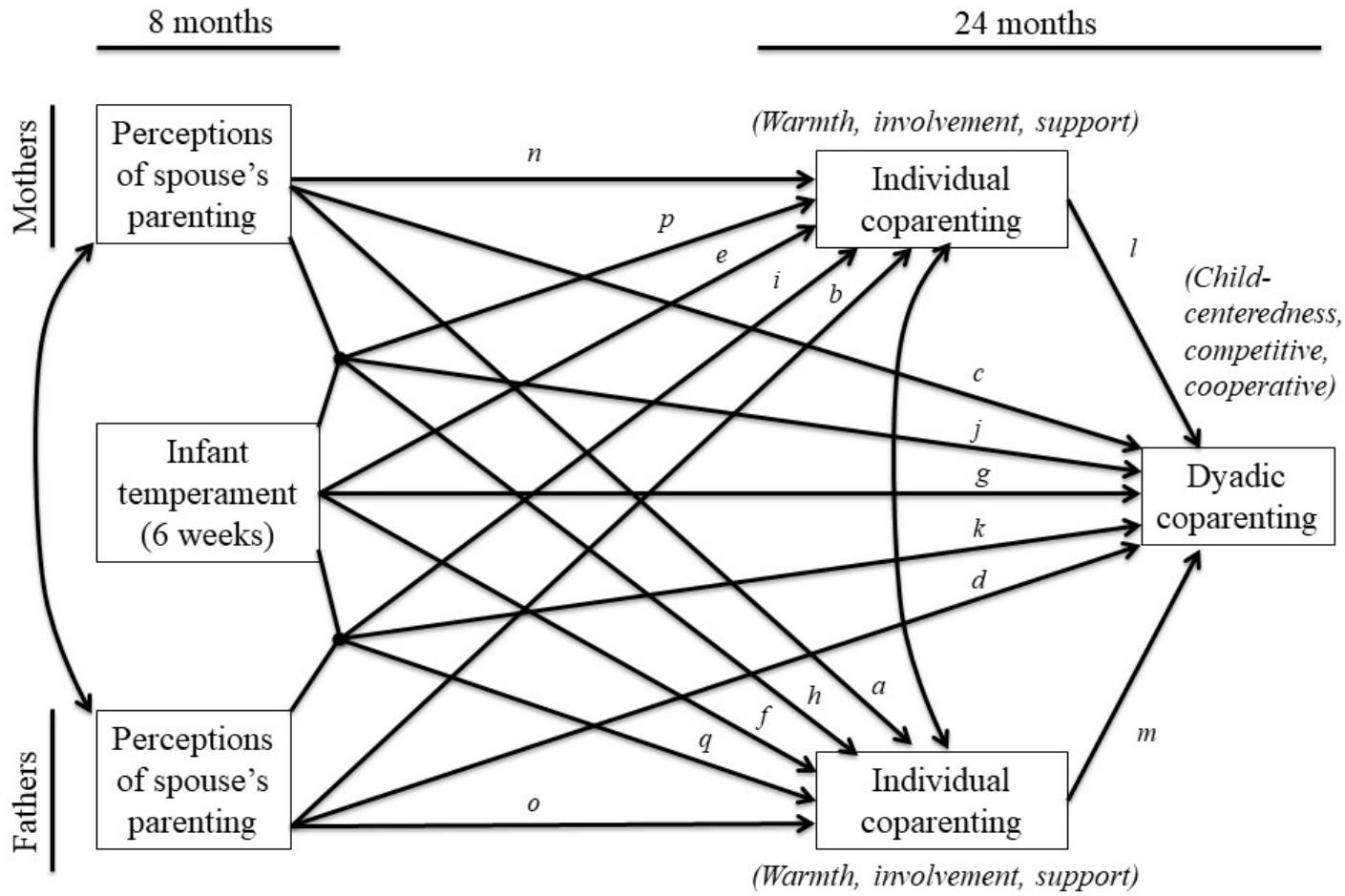

Figure 1. Main Hypothesized Model.

Hypothesis 2: More positive parental perceptions of spouses' parenting at 8 months will be positively associated with higher levels of dyadic child-centered and cooperative coparenting and negatively associated with higher levels of dyadic competitive coparenting at 24 months (Figure 1 – paths *c* and *d*).

Hypothesis 3: Higher levels of infant temperament reactivity (i.e., a more challenging temperament) will be associated with lower levels of individual involvement, support, parent-to-child warmth in coparenting (Figure 1 – paths *e* and *f*), especially for fathers, and with lower levels of dyadic child-centered and cooperative coparenting, and higher levels of dyadic competitive coparenting at 24 months (Figure 1 – path *g*).

Hypothesis 4: The relation between parents' perceptions of each others' parenting at 8 months and their spouse's individual coparenting behaviors (i.e., parent-to-child warmth, involvement, and support in coparenting) at 24 months, will be moderated by infant temperament (Figure 1 – partner effects: for mothers, path *h*; for fathers, path *i*).

Hypothesis 5: The direct path between parents' perceptions of each others' parenting at 8 months and dyadic coparenting quality (cooperative, competitive, and child-centered coparenting) at 24 months will be moderated by infant temperament (Figure 1 – for mothers, path *j;* for fathers, path *k*).

Regarding Hypotheses 4 and 5, previous research (e.g., Burney & Leerkes, 2010; Laxman et al., 2013; Schoppe-Sullivan et al., 2007) suggests that the ways in which infant temperament moderates the relation between parents' perceptions of the other parent and parents' individual and dyadic coparenting behaviors may differ for mothers' perceptions of fathers versus fathers' perceptions of mothers. That is, mothers' lower

perceptions of fathers in combination with a more reactive infant may predict lower warmth, involvement, and support for fathers, whereas father's lower perceptions of mothers may be less likely to affect mothers' warmth, support, or involvement, regardless of the infants' temperament. In addition, the nature of the interaction between parents' perceptions of their spouse's parenting and infant temperament is difficult to predict, since past research has yielded mixed results.

Based on research indicating that parenting quality is lower when parents (especially fathers) have more challenging, reactive infants (e.g., Putnam et al., 2002; Van Egeren, 2004), one might expect that the poorest quality of coparenting would be found for parents (especially fathers) who have a highly reactive infant and whose spouses have a lower opinion of their parenting. Therefore, it may be that the lowest quality of individual coparenting behaviors (involvement, support, and warmth) will be predicted by infants' higher temperamental reactivity in combination with being parents' more negative perceptions of their spouse, especially mothers' negative perceptions of fathers. On the other hand, based on research indicating that the *highest* levels of coparenting quality were found for couples who had more challenging infants but higher quality marriages (Shoppe-Sullivan et al. 2007), coparenting quality may be highest for parents who have a highly reactive infant and a spouse who has a high opinion of their parenting. Thus, the nature of the interaction between parents' perception of their spouse's parenting and infant temperament (Figure 1 – path pairs *h* and *i*, *j* and *k*) will be examined on an exploratory basis.

Hypothesis 6: Higher levels of mothers' and fathers' involvement, support, and parent-to-child warmth in coparenting will be positively associated with dyadic cooperative and child-centered coparenting and negatively associated with competitive coparenting (Figure 1 – paths *l* and *m*). However, it is possible that only higher involvement of fathers will be related to cooperative and child-centered coparenting, since maternal involvement in coparenting is less likely to vary.

Hypothesis 7: Parents' individual behaviors in coparenting (i.e., warmth, involvement, support) will mediate the association between parents' opinions of each others' parenting at 8 months and dyadic coparenting outcomes at 24 months (Figure 1 – partner effects: paths *a* to *m*, and paths *b* to *l*), as well as the association between the interaction of parents' perceptions of each others' parenting at 8 months with infant temperament and dyadic coparenting outcomes at 24 months (Figure 1 – partner effects: paths *h* to *m*, and paths *i* to *l*).

In addition, the relation of each parents' perceptions of their spouse's parenting to their own later behavior during coparenting will be examined on an exploratory basis (Figure 1 – actor effects: for mothers, path *n*; for fathers, path *o)*. The relations of the interaction of each parents' perceptions with infant temperament to predict parents' own later behavior during coparenting will also be examined on an exploratory basis (Figure 1 – actor effects: for mothers, path *p*; for fathers, path *q)*. I also tested for significance in parent gender paths to examine whether or not mothers and fathers show a significant difference in their influence on subsequent coparenting variables in each of the models.

Finally, I also tested an alternative model (Figure 2) proposing that the quality of an infant's temperament may influence parents' perceptions of their spouse's parenting, and consequentially, their qualities of individual and dyadic behavior in coparenting situations. For example, parents may be more likely to perceive their spouse's parenting more negatively if they have a baby who is very fussy and difficult to soothe, leading to less individual warmth, support, and involvement in coparenting, and in turn, to more competitive, less cooperative, and less child-centered coparenting. Figure 2 provides a model of these alternative hypotheses, which proposes that infant temperament predicts parents' perceptions of each others' parenting and their individual involvement, support, and warmth in coparenting, and that this relation is mediated by parents' perceptions of their spouse's parenting.

Alternative Hypothesis 1: Infant temperament at 6 weeks will predict parents' perceptions of their spouses' parenting at 8 months (Figure 2 – paths *r* and *s*) and dyadic child-centeredness competitive, and cooperative coparenting (Figure 2 – path *g*). Specifically, greater infant temperamental reactivity will predict lower perceptions by mothers and fathers of their spouse's parenting at 8 months, lower ratings of dyadic child-centeredness and cooperative coparenting at 24 months, and higher dyadic competitive coparenting at 24 months.

Alternative Hypothesis 2: Higher parents' perceptions of their spouse's parenting at 8 months will be predictive of higher ratings of parents' individual involvement, support, and warmth in coparenting at 24 months (Figure 2 – actor effects, paths *a* and *b*).

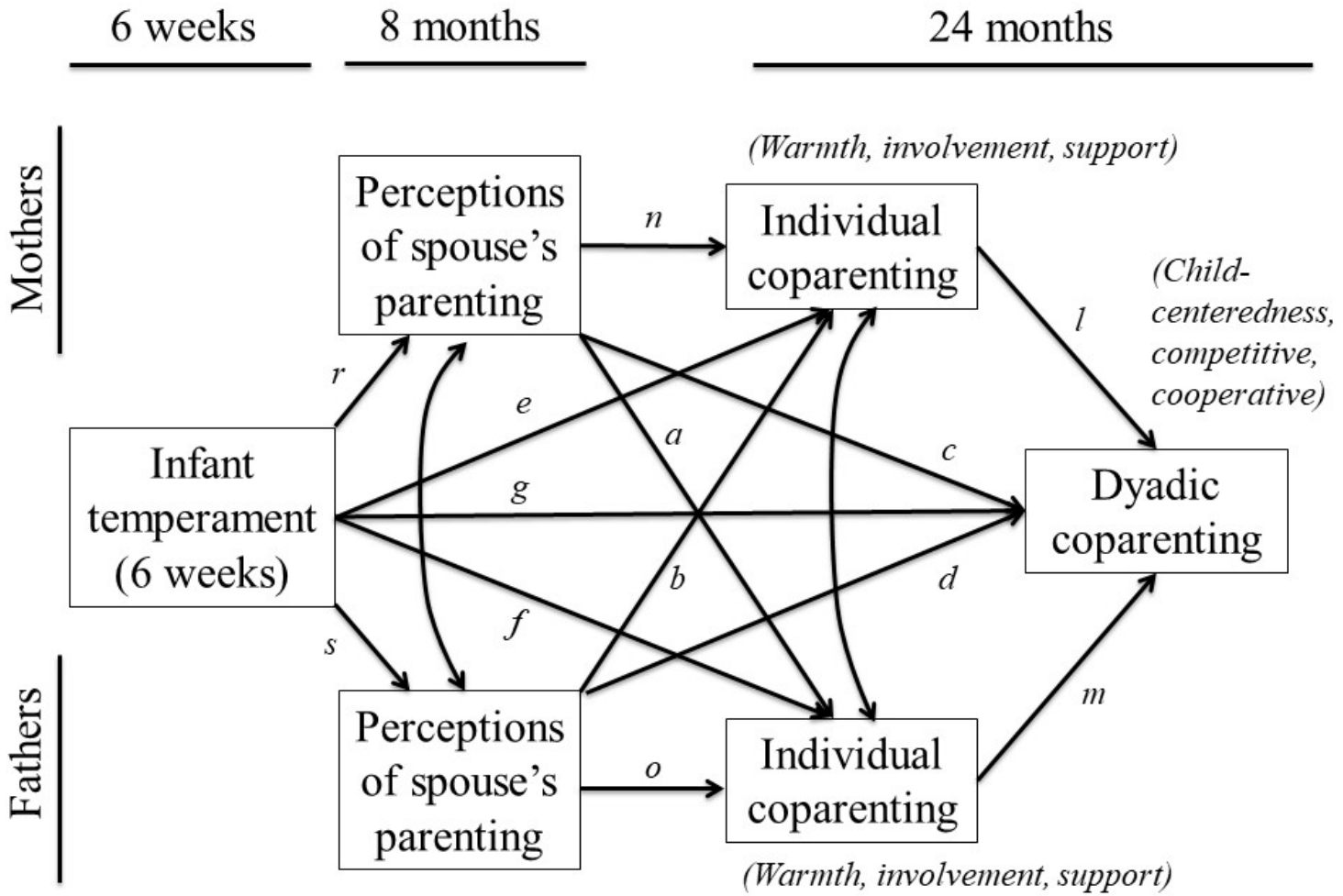

Figure 2. Alternative Hypothesized Model.

Alternative Hypothesis 3: Higher levels of individual involvement, support, and warmth will be associated with higher levels of dyadic child-centeredness and cooperative coparenting and with lower levels of dyadic competitive coparenting (Figure 2 – paths *l* and *m*).

Alternative Hypothesis 4: Parents' perceptions of their spouse's parenting and individual coparenting (involvement, support, and warmth) will mediate the relation between infant temperament and dyadic coparenting qualities.

In each model, I will control for family income and parents' education, as low socioeconomic status (SES) has been related to couples demonstrating more undermining coparenting behaviors (Schoppe-Sullivan & Mangelsdorf, 2013).

Method

Participants

Data were drawn from two waves of a longitudinal study that examined 125 families from a large Southwestern city across the transition to parenthood. In order to participate, couples had to be English-speaking, cohabitating, and in the third trimester of pregnancy (95.9% were married). Participants were recruited from birthing classes, public service radio announcements, newspaper press releases, and flyers distributed to maternity stores. Mothers' ages at the time of recruitment ranged from 16-42 (M = 29), and fathers' ages ranged from 19 to 50 (M = 31). Most participants identified as European American (84%), and the remainder were Hispanic (8%), African American (2%), or biracial or of another ethnicity (6%). Median family income for the sample was $30,000-$44,999. Of the 125 families in the sample, 17% earned less than $30,000; 24.3% earned $30,000-$45,000; 27.1% earned $45,000-$60,000; and 31.4% earned over $60,000. The participants were generally well-educated: 9% of the mothers and 8% of the fathers earned a high school degree; 25% of the mothers and 35% of the fathers had some training beyond high school but did not graduate from college; 46% of the mothers and 38% of the fathers earned a bachelor degree; and 17% of the mothers and fathers had a graduate or post-college degree.

Data for the longitudinal study were collected in four waves: prenatally (i.e., when mothers' were in their third trimester of pregnancy), and at 6, 8, and 24 months post-childbirth. Due to attrition, 17 families left the study by 24 months because they moved away (N =12), were too busy to participate (N = 3), or could not be located (N =

2). Couples reporting family incomes less than $30,000 were more likely to drop out by 24 months compared with couples with higher incomes, $\square^2$ (1, N = 124) = 6.75, p = .01. Thus, I controlled for family income in the analyses. Scores of perceptions of spouse's parenting were lower among those who left by 24 months compared to those who remained in the study for mothers (t[116] = -2.26, p = .03) and fathers, t(116) = -2.96, p = .004. Mothers who left the study by 24 months also had less education compared to those who remained in the study, t(123) = -2.26, p = .03. Scores of infant temperament and father education did not differ by attrition at 24 months.

Procedure

The present study utilized covariates (family income and parent education) collected from the first wave and key data variables from the second, third, and fourth waves. Parents reported demographic information during the first wave of the study (i.e., prenatal stage). At 6-8 weeks post-childbirth, mothers completed a questionnaire about their infant's temperament. At 8 months, the parents were asked to discuss their spouses' strengths and weaknesses as a parent. At 24 months, families (i.e., mother-father-child) were videotaped while participating in a 25-minute in-home observation of a whole-family triadic interaction task to assess family interaction quality, including individual and dyadic coparenting behaviors.

Measures

Infant temperament. The Infant Behavior Questionnaire (IBQ, Rothbart, 1981) was mailed to couples when their infants were 6 weeks old, to be completed and returned within two weeks. This questionnaire included 94 items assessing their infants' activity

level, smiling and laughter, fear, distress to limitations, soothability, and duration of orienting, each rated on a 7-point Likert scale. As suggested by Rothbart (1981, 1986), a composite scale of negative reactivity was created by subtracting the standardized positive reactivity score from the negative reactivity score ($\alpha = .77$). Higher scores were therefore designated as reflecting a more challenging temperament, and lower scores reflected a more easygoing temperament. Here, mother-reported scores were used, though mothers' scores correlated with fathers' scores, $r(114) = .45$, $p < .001$.

Parents' perceptions of each other's parenting. Parents' perceptions of each other's parenting were assessed from videotapes of the dyadic couple discussions during the 8-month home visit in which parents were asked to discuss their spouses' strengths and weaknesses as a parent. Five trained coders rated these videotaped conversations using 7-point scales that assessed how parents perceived their spouses' parenting in four domains: emotional engagement, physical involvement, responsibility, and overall parenting skills. High scores on emotional engagement reflect the parents' perception of their spouses' spontaneous displays of verbal or physical affection and engagement (e.g., kissing and hugging their baby, coming back home as soon as possible, saying "I love you." to their child). High scores on physical involvement reflect the degree to which the parent believes their spouse is capable of conducting instrumental caregiving, such as feeding and diaper changing. High scores on responsibility reflect how well the parent believes their partner handles situations in which intervention is necessary for the child's socialization and safety. High scores on overall parenting skills reflect an overall opinion of one's spouse's general behavior as a parent. The sum of the scores in the four domains

was used to construct a summary score of perception of spouse's parenting skills. Each domain of parenting was assessed on the quantity and quality of relevant descriptions stated by spouses in the videotaped discussion. Simply identifying what their spouses did was insufficient to justify giving either low or high scores in each domain. Instead, the statements needed to be coherent, believable, and supported by clear examples to be given extreme scores.

Coder training and reliability. Five coders were trained to reliably rate practice videotapes, then each tape was rated independently by two coders blind to the study hypotheses, and disagreements of greater than two points were resolved by a third rater. Interrater reliability for the 8-month ratings of parents' perceptions of each other's parenting, based on intra-class correlation coefficients, was .77 for mothers' ratings of fathers and .75 for fathers' ratings of mothers.

Coparenting quality. Parents' individual and dyadic behaviors in coparenting were assessed from videotaped observations of the 25-minute triadic family interactions. The length of this task is similar to that of triadic interaction tasks used in past studies of coparenting with toddlers, which generally range from 15-30 minutes (e.g., Kolak & Vernon-Feagans, 2008; McHale, Kuersten-Hogan, & Lauretti 2000). In this task, parents were instructed to prepare a snack, change their child's clothes, and participate in a parenting card-sort task. The card-sorting task was used to observe parents' coparenting in the context of completing an adult task while their child was present, a common occurrence in daily life. Additionally, if time remained after parents had completed the other tasks, the parents were asked to assist the child in completing a peg-sorting task

designed to be challenging for two-year-olds. The parents were told that the tasks could be performed in any order they wished, but that they should try to finish all three of the required tasks within the 25-minute period. This time constraint was designed to elicit coparenting behaviors that might typically occur when parents must get the child ready to leave the house at a particular time, an everyday situation that is moderately stressful. This procedure has been shown to effectively elicit a variety of coparenting behaviors in past research (e.g., Gallegos et al., 2017; Murphy et al., 2017).

Videotapes of the triadic family interactions were coded for individual and dyadic coparenting quality using scales adapted from the Coparenting and Family Rating Scales (CFRS) developed by McHale, Kuersten-Hogan, & Lauretti (2000). The concurrent, predictive, and discriminant validity and the test-retest reliability of the CFRS has been well established by McHale and colleagues (e.g., McHale, Kuersten-Hogan, & Lauretti, 2000).

Parents' individual involvement, support, and warmth during coparenting. Each parent's *involvement* in parental decision-making during the triadic coparenting interaction was rated using a five-point Likert-type scale. The *involvement in coparenting* scale assesses the extent to which each parent is involved in making decisions, verbally or behaviorally, concerning parenting of the child. A score of 5 indicates that the parent made virtually all of the decisions concerning the child (e.g., setting limits, giving directions), either unilaterally or jointly with the other parent. A score of 3 indicates that the parent made about half of the parenting decisions. A score of 1 indicates that the parent made virtually no child-rearing decisions. It is important to

note that fathers' and mothers' scores on this scale are interdependent since to the extent that one parent makes most or all of the decisions, the other usually makes few or none. However, it is possible that highly cooperative coparents might both receive high individual scores if they make many parenting decisions jointly.

Each parents' *support* of their spouse during the triadic coparenting interaction was rated on a five-point Likert scale. The *support in coparenting* scale assesses the extent to which each parent provided behavioral support to the other parent while engaging in coparenting behaviors; for example, one parent entertained the child while the other dressed him. A score of a 5 indicates that the parent showed high positive behavioral support for the other parent. A score of 4 indicates high support but not as much as that of a 5. A score of 3 indicates that the parent provided some support, but not as much as he or she could have been provided. A score of 1 indicates that the parent shows little or no support for the other parent during the interaction.

Each parent's *warmth* towards their child during the triadic coparenting interaction was rated using a seven-point Likert-type scale. The *warmth* scale assesses the extent to which each parent individually demonstrates warm and positive affect towards their child during coparenting. A score of 7 is assigned to a parent when he/she demonstrated extreme expressiveness, using speech, touch, and active eye contact to show warmth during their session. Scores of 6 reflect these same behaviors, but not as extensively as that which a "7" would demonstrate. Parents who were assigned a 5 used touch, eye contact, or smiles to periodically supplement compliments or praise to their child. Scores of 4 are assigned to parents who are "average" in their warmth expressed.

These parents show solid responsiveness to their child and may periodically praise their child for their actions (e.g., "good job"), but not with much enthusiasm. Scores of 3 are assigned to parents who respond to their child's actions and invitations to interact in the tasks but with less praise and enthusiasm as that of a "4". Parents are assigned a 2 when they show stiff responses to their child, and may rarely smile at or nod approval to their child. Scores of 1 reflect the same stiffness as well as a lack of response by parents to respond to their child's invitations to interact.

Dyadic coparenting quality. Dyadic-level ratings of coparenting were also rated on five-point Likert-type scales. *Competitive coparenting* was characterized as the degree to which parents tried to undermine or contradict the other parent, jockey for control of the child, or draw the child's attention away while the other parent interacted with the child. A score of 5 indicates parents who show excessive jockeying or competing with no insight or awareness into their behaviors, whereas a score of 1 is given when there is absolutely no instance of competition. Parents who do not engage in coparenting (i.e., one parent does all of the parenting while the other is uninvolved) receive scores of 1 on both scales. The coding manual also states that high scores for competitive coparenting should be rare, especially in normative samples, since highly competitive coparenting is a clearly maladaptive family interaction pattern.

Cooperative coparenting is characterized as the degree to which parents' interactions involve parents' joint efforts to accomplish parenting goals. Parents might either make parenting decisions jointly, or one parent may make a decision while the other facilitates and backs up that parent in carrying out that decision. Parents who

showed multiple, clear instances of facilitating, building, and supporting one another are assigned as a score of 5, whereas parents who are actively competitive, carry out their own agendas, or do not participate in coparenting receive had a score of 1. The coding manual states that high scores should be given very judiciously, since "multiple, clear instances of facilitating, building, and supporting one another" (McHale, 1999) (i.e., high-range scores) are relatively rare.

Child-centered behavior is characterized as the degree to which parents demonstrate behaviors oriented towards meeting or understanding their child's needs or desires. Parents are assigned a dyadic score of 5 when they are completely child-centered and catering exclusively to their child's interests. Here, both parents may forego the prescribed order of tasks so that interactions with their child will run more smoothly. Parents are assigned a score of 4 if they showed the same child-centered tendencies but one parent would occasionally "hold out" for a brief period to provide guidance to the other parent for the tasks. Parents are assigned a 3 when one parent would demonstrate child-centeredness but the other parent was more directive to the other parent regarding the tasks, or when parents each show a mix of parent-centered and child-centered behaviors. Scores of 2 are assigned to families when parents are in charge of the tasks, though they occasionally allow their child to direct them off of a task they began. Scores of 1 are assigned when parents direct the actions and rarely if ever allowed their child to decide what to do. Here, the interactions are dominated by adults structuring of all activities and ignoring the child's initiatives.

As mentioned previously, competitive and cooperative coparenting are orthogonal constructs. Although many couples who are high on one dimension are likely to be low on the other, couples who do relatively little coparenting (that is, couples in which one spouse makes nearly all of the parenting decisions while the other stays relatively uninvolved) would be scored low on both constructs, while other couples may be rated high in both competitive and cooperative coparenting.

Coder training and reliability. A team of six undergraduate coders were trained by the principal investigator and an advanced graduate student for two months, by observing and conference-coding videotapes from nine families representing a range of coparenting quality. Dyadic, maternal, and paternal ratings were made by separate teams of coders (two coders on each team) who were blind to each other's ratings and to the hypotheses of the study. The graduate student checked the interrater reliability of the undergraduate coders regularly to ensure reliable coding, and if any of the ratings between the two coders were discrepant by more than one point, the coding team met as a group to conference code that case. Due to the time-intensive nature of the coding and coder training, 50% percent of the triadic interaction tapes were double-coded. For all of the scales, average ratings between the two coders were used in the analyses when available. Inter-rater intraclass correlations were .70 for cooperative coparenting, .81 for competitive coparenting, .75 for child-centeredness, .73 for mothers' involvement in coparenting, .89 for fathers' involvement in coparenting, .87 for mothers' parent-to-child warmth, and .95 for fathers' parent-to-child warmth.

Control variables. Family income and parent education were used as controls, since low socioeconomic status (SES) has been related to increased parental stress (e.g., Amato, Johnson, Booth, & Rodgers, 2004), and less parental education has been associated with unsupportive family interactions (e.g., Barlow et al., 2011; Stright & Bales, 2003). *Family income* was assessed by having parents select an income range on a 1-5 scale that corresponded to their overall household income in increments of $15,000 (e.g., $30,000-$45,000). *Parent education* was assessed during the first wave of the longitudinal study by having parents select a number on a 1-6 scale that corresponded with their highest level of education obtained (i.e., 1 = less than 12th grade; 2 = high school diploma or equivalent; 3 = high school plus business or trade school diploma; 4 = 1-4 years of college but did not graduate; 5 = graduated from college; 6 = post-graduate professional degree).

Data Analyses

The hypotheses were tested with actor-partner interdependence models (APIM; Cook and Kenny, 2005) using Mplus 6.0 software for structural equation models (see Figure 1). The APIM method allows for testing interdependent dyadic relationships while simultaneously analyzing actor effects, which are within-person "spillover" effects from one domain to another, and partner (or "crossover") effects, reflecting the influence of one partner in the dyad on the other. Mothers' and fathers' scores for individual warmth, involvement, and support in coparenting, and dyadic child-centered, competitive, and cooperative coparenting were each regressed on mothers' and fathers' respective education and family income.

Given the small sample size, the parameters of the models were estimated using the full information maximum likelihood (FIML) estimation with standard errors that are robust to non-normality (MLR estimator). Missing data were accounted for through the FIML estimation (Allison, 2003), which enables inclusion of all data in the analyses. With FIML, missing data are not imputed; instead, all available data for each participant are fit to the covariance matrix (Enders, 2001). Therefore, our analyses include all data from each time of data collection. Table 1 presents the sample sizes, means, SDs, and correlations for each variable.

FIML assumes that data are either missing at random (i.e., probability of data missing on Y is related to predictor variables) or missing completely at random (i.e., probability of data missing on Y is not related to predictor variables). Researchers should use FIML or multiple imputation when dealing with missing data because running a statistical model without one of these two methods (i.e., using listwise deletion) results in biasing the sample (Enders, 2010). An analysis of missing data patterns revealed 15 distinct patterns of missingness in observations (i.e., families). In total, 83 observations were missing no data (66.40%); 12 observations were missing data for 10 variables; eight observations were missing for nine variables, and the remaining patterns of missing data involved missing data for between one and three variables in our study. The three dyadic coparenting variables in our study (i.e., dyadic child-centeredness, competitive/ cooperative coparenting) were each missing 33 cases, or 26.40% of the data. Mothers' and fathers' perceptions of their spouses' parenting and infant temperament were each missing 7 cases or 5.60% of the data. Mothers' and fathers' parent-to-child warmth,

involvement, and support in coparenting were each missing 30 cases or 24%. Family income was missing for 11 cases at 8 months (8.80%) and 26 cases at 24 months (20.80%). Given our sample size of 125, the extensive number of missing data patterns combined with the evidence that there is no predominant pattern of missingness provide strong evidence that data are missing at random, thus enabling the use of FIML in our analyses.

Without using FIML, a power analysis using G*Power 3.1 procedures (Faul, Erdfelder, Buchner, & Lang, 2009) with 92 participants reporting dyadic data at the 24-month wave indicated that power was .80 to detect a medium size R^2 deviation from zero (i.e., .20) of the dyadic dependent variables with 10 predictors (three covariates, two parental perception variables, infant temperament, two interactions, two individual coparenting variables) and $\alpha = .05$.

Since each of the goodness-of-fit indices operates on different assumptions, several indices of overall fit were included to convey a consistent evaluation (Hoyle & Panter, 1995). Due to the sample size of 125, to fit the models to the data, the comparative fit index (CFI; Bentler, 1990) and the root mean square error of approximation (RMSEA; Browne & Cudeck, 1993) was used along with the Chi-square analysis. For the CFI, values of .90 or higher are interpreted as evidence of good model fit (Hoyle & Panter, 1995). RMSEA values less than .05 are generally accepted as indicators of good model fit; values between .05 and .08 are often considered of adequate model fit; and those greater than .10 indicate poor fit (Browne & Cudeck, 1993).

To test for potential gender differences between mothers and fathers in their individual coparenting as influenced by their infant's temperament, and in the influence of their perceptions of each others' parenting on their later coparenting behaviors (individual and dyadic), I compared their paths using Chi-square difference tests with the Satorra-Bentler correction method, as per the usage of the aforementioned MLR method, to compare model fit differences after sequentially constraining pairs of paths. Tables 3-5 show each sequential step and whether or not the model fit significant changes after each step of parent gender pair constraints. Here, I tested whether or not paths were consistent across mothers and fathers in pairs (path pairs *a* and *b*, *c* and *d*, *e* and *f*, *h* and *i*, *j* and *k*, *l* and *m*, *n* and *o*, *p* and *q*).

To examine significant interaction effects of parents' perceptions with infant temperament on the exogenous coparenting variables, I first reverse-scored parents' perceptions of their spouse's parenting at 8 months by subtracting each score from 29 (28 was the maximum score of positive perceptions) in order to have higher scores of perceptions share the same valence (negative) as that of infant temperament. I then centered parents' perceptions and infant temperament, as recommended by Aiken and West (1991). For each significant interaction term, I probed and plotted simple slopes of parents' perceptions using high and low values (+/- 1 *SD* of the mean) of infant temperament as the moderating variable.

Results

Descriptive Statistics

Table 1 shows the means, standard deviations, and correlations of the study variables. As shown in Table 1, mothers' and fathers' perceptions of their spouses' parenting were positively correlated ($r[117] = .60$, $p < .001$), as were ratings of mothers' and fathers' warmth in coparenting ($r[94] = .20$, $p = .049$) and support of each other during coparenting, $r(94) = .36$, $p < .001$. As expected, mothers' and fathers' scores of involvement in making parenting decisions were negatively correlated $r(94) = -.58$, $p < .001$, indicating that the more one parent was involved in making parenting decisions, the less the other parent was involved. In addition, within families, cooperative coparenting scores were positively correlated with child-centered coparenting scores ($r[91] = .54$, $p < .001$), but were not significantly correlated with competitive coparenting. Competitive coparenting and child-centered coparenting were also not significantly correlated.

Paired-sample t-tests were used to examine differences between mothers' and fathers' perceptions of each other's parenting and individual coparenting behaviors (warmth, involvement, and support). Compared to mothers, fathers perceived their spouse's parenting more positively ($t[117] = -8.82$, $p < .001$, $d = .77$) and showed more behavioral support for their spouses' parent during coparenting, $t(94) = -2.40$, $p = .02$, $d = .29$. Mothers were more involved in parenting decisions than fathers, $t(94) = 5.38$, $p < .001$, $d = .98$. Mothers and fathers did not differ significantly in their warmth towards their child during coparenting, $t[94] = -1.01$, $p = .32$, $d = .13$.

Table 1

Descriptives and Correlations

	1	2	3	4	5	6	7	8	9	10
1. Child-centered coparenting	--									
2. Competitive coparenting	-.08	--								
3. Cooperative coparenting	.54***	-.06	--							
4. Mothers' perceptions of spouses' parenting	.16	-.19†	.16	--						
5. Fathers' perceptions of spouses' parenting	.11	-.15	.12	.60***	--					
6. Infant temperament	-.09	.02	-.05	.17†	.13	--				
7. Mothers' perceptions * infant temperament	.13	.03	.04	-.23*	-.14	-.28**	--			
8. Fathers' perceptions * infant temperament	-.12	.03	-.15	-.17†	-.19*	-.18*	.55***	--		
9. Mothers' warmth	.41***	-.25*	.24*	.29**	.19†	.01	-.05	.20†	--	
10. Fathers' warmth	.40***	-.16	.29**	.15	.11	.05	.17	-.01	.20*	--
11. Mothers' involvement	-.03	.05	-.001	-.05	-.05	-.04	-.03	-.06	-.07	-.06
12. Fathers' involvement	.18†	-.12	.15	.05	-.09	-.03	.01	.13	.05	.26*
13. Mothers' support	.16	-.48***	.10	.07	.03	.20†	-.004	-.06	.37***	.26*
14. Fathers' support	.27**	-.28**	.30**	.22*	.11	-.02	-.01	-.18†	.39***	.32**
15. Family income (8 mo.)	.05	-.29**	.001	.27**	.21*	.07	.03	-.15	.20†	.07
16. Family income (24 mo.)	.06	-.05	-.05	.04	.12	-.03	.06	-.11	.08	-.07
17. Mother education	-.00	.10	-.003	.08	.08	.16†	-.12	-.08	.08	-.09
18. Father education	.10	.06	.07	.14	.02	.15†	-.10	-.04	.04	.05
N	92	92	92	118	118	118	113	113	95	95
M	3.15	1.79	2.83	21.33	23.66	-.51	.17	.13	4.27	4.39
SD	.80	.91	.72	3.59	2.36	1.72	1.15	.94	.91	.98

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 1 (continued)
Descriptives and Correlations

	11	12	13	14	15	16	17	18
11. Mothers' involvement	--							
12. Fathers' involvement	-.58***	--						
13. Mothers' support	-.17†	.18†	--					
14. Fathers' support	.04	-.09	.36***	--				
15. Family income (8 mo.)	-.01	-.10	.16	.45***	--			
16. Family income (24 mo.)	-.01	-.16	-.04	.25*	.80***	--		
17. Mother education	.01	-.14	-.05	-.05	.25**	.16	--	
18. Father education	-.01	-.02	.05	-.03	.38***	.30**	.48***	--
N	95	95	95	95	114	99	125	125
M	3.37	2.75	3.73	3.92	3.50	3.81	4.54	4.46
SD	.62	.65	.75	.49	1.20	1.10	1.19	1.17

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Models with Parenting Involvement as a Mediator.

Figures 3, 4, and 6 demonstrate the paths of three models in which infant temperament, both parents' perceptions of the other parent, and the interactions of temperament and parents' perceptions, were expected to predict individual parent involvement in coparenting, which in turn was predicted to function as the mediator to predict dyadic coparenting. Models with parenting involvement as a mediator are shown in Figure 3 (predicting competitive coparenting), Figure 4 (predicting cooperative coparenting), and Figure 6 (predicting child-centered coparenting).

Model predicting dyadic competitive coparenting. This model, shown in Figure 3, demonstrated a marginal model fit, $\chi^2(15) = 23.17$, $p = .08$; RMSEA = .07 (90% CI = .00, .12); CFI = .92. Table 2 shows the direct regression paths in this model, while Table 3 shows the indirect paths.

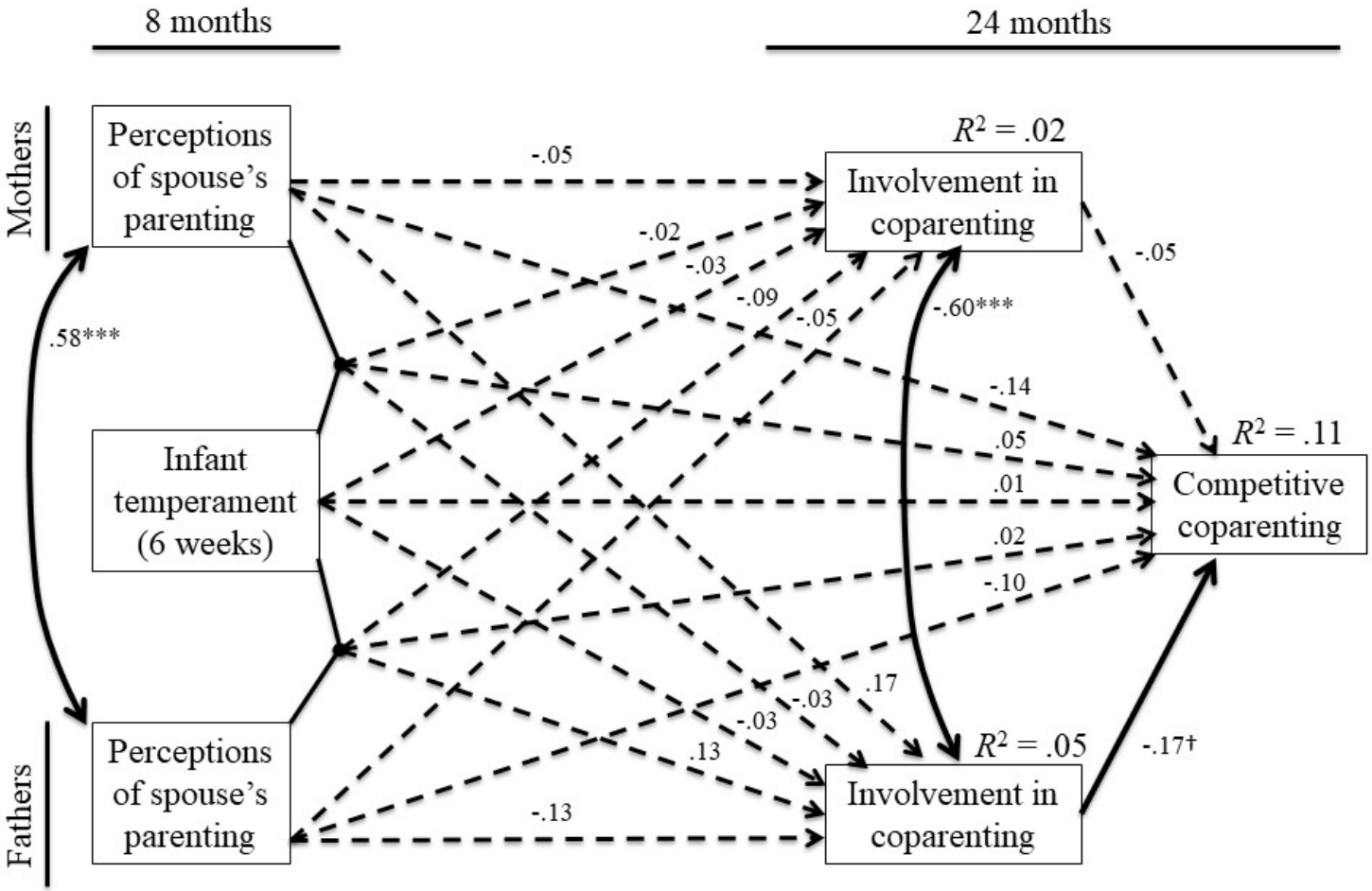

Figure 3. Predictors of Individual Involvement and Dyadic Competitive Coparenting.
Solid lines denote significant paths. Standardized beta coefficients shown.
$\chi^2(15) = 23.17$, $p = .08$; RMSEA = .07 (90% CI = .00, .12); CFI = .92. † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 2

Regression Predictors of Individual Parent Involvement and Competitive Coparenting

	B	*SE*	β	95% CI β
Mother perceptions of spouses' parenting → Mother involvement	-.008	.03	-.05	-.36, .27
Mother perceptions of spouses' parenting → Father involvement	-.03	.03	.17	-.12, .45
Mother perceptions of spouses' parenting → Competitive coparenting	-.04	.04	-.14	-.47, .19
Father perceptions of spouses' parenting → Mother involvement	-.01	.04	-.05	-.31, .21
Father perceptions of spouses' parenting → Father involvement	-.04	.04	-.13	-.43, .17
Father perceptions of spouses' parenting → Competitive coparenting	-.04	.05	-.10	-.35, .16
Infant temperament → Mother involvement	-.01	.03	-.03	-.21, .14
Infant temperament → Father involvement	-.01	.03	-.03	-.20, .13
Infant temperament → Competitive temperament	.008	.07	.01	-.24, .27
(Mother perceptions * infant temperament) → Mother involvement	-.002	.01	-.02	-.32, .28
(Mother perceptions * infant temperament) → Father involvement	-.003	.01	-.03	-.29, .23
(Mother perceptions * infant temperament) → Competitive coparenting	.006	.02	.05	-.15, .25
(Father perceptions * infant temperament) → Mother involvement	-.01	.02	-.09	-.31, .13
(Father perceptions * infant temperament) → Father involvement	.02	.02	.13	-.05, .32
(Father perceptions * infant temperament) → Competitive coparenting	.004	.02	.02	-.14, .17
Mother involvement → Competitive coparenting	-.07	.18	-.05	-.29, .19
Father involvement → Competitive coparenting	**-.24**	**.14**	**-.17†**	**-.36, .03**
Controls:				
Family income (8 mo.) → Mother perceptions	**.88**	**.31**	**.30*** **	**.12, .48**
Family income (8 mo.) → Father perceptions	**.53**	**.24**	**.27***	**.05, .49**
Family income (24 mo.) → Mother involvement	.02	.07	.04	-.21, .28
Family income (24 mo.) → Father involvement	-.09	.06	-.15	-.36, .05
Family income (24 mo.) → Competitive coparenting	-.13	.11	-.17	-.42, .08
Mother education → Mother perceptions	-.08	.24	-.03	-.18, .13
Father education → Father perceptions	-.20	.17	-.10	-.26, .06
Mother education → Mother involvement	-.04	.06	-.08	-.29, .13
Father education → Father involvement	.02	.06	.04	-.16, .23

(Table 2 – continued)

Mother education → Competitive coparenting	.06	.08	.07	-.12, .26
Father education → Competitive coparenting	.09	.08	.12	-.09, .32

Note. Bold denotes significant paths.
† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3
Tests of Mediation for Structural Equation Models Predicting Individual Parent Involvement and Competitive Coparenting

	Mplus Estimate of Indirect Effects				Sobel Test	
Path	Indirect	95% CI Indirect	Direct	Total	Z	*p*
Mother perceptions → Mother involvement → Competitive coparenting	.002	-.02, .02	-.14	-.16	.24	.81
Mother perceptions → Father involvement → Competitive coparenting	-.03	-.09, .03	-.14	-.16	-.92	.36
Father perceptions → Mother involvement → Competitive coparenting	.003	-.02, .02	-.10	-.07	.29	.77
Father perceptions → Father involvement → Competitive coparenting	.02	-.04, .08	-.10	-.07	.77	.44
(Mother perceptions * Infant temperament) → Mother involvement → Competitive coparenting	.001	-.01, .02	.05	.05	.14	.88
(Mother perceptions * Infant temperament) → Father involvement → Competitive coparenting	.006	-.04, .05	.05	.05	.25	.80
(Father perceptions * Infant temperament) → Mother involvement → Competitive coparenting	.004	-.02, .03	.02	-.002	.37	.71
(Father perceptions * Infant temperament) → Father involvement → Competitive coparenting	-.02	-.06, .02	.02	-.002	-1.12	.26

Note. No evidence for partial mediation. Standardized effects presented for Mplus estimates.
* $p < .05$. ** $p < .01$. *** $p < .001$.

As shown in Figure 3 and in Table 2, no direct paths in this model were significant except for a marginally significant path indicating that fathers' lower involvement predicted higher competitive coparenting (β = -.17, p = .098). This provides partial support for Hypothesis 6, which proposed that lower involvement would be related to higher competitive coparenting. As shown in Table 3, no indirect paths were significant. Thus, no support was found for Hypotheses 1-5 or Hypothesis 7 in this model.

Model predicting dyadic cooperative coparenting. This model, shown in Figure 4, demonstrates a good model fit, $\chi^2(15) = 12.31$, p = .65; RMSEA = .00 (90% CI = .00, .07); CFI = 1.00. Table 4 shows the direct regression paths in this model, while Table 5 shows the non-significant indirect paths in this model. Some support was found for Hypothesis 5, which suggested that parents' perceptions and infant temperament would interact to predict dyadic coparenting outcomes. Specifically, fathers' perceptions of their wives' coparenting interacted with infant temperament to predict cooperative coparenting, β = -.25, p = .004. In the graphed interaction in Figure 5, simple slopes analyses indicated that when infant temperament was more easygoing, fathers' more positive perceptions of their wives' parenting predicted higher cooperative coparenting (β = .31, p = .001), whereas fathers' perceptions were unrelated to cooperative coparenting when infant temperament was more challenging, β = -.15, p = .36.. In support of Hypothesis 6, cooperative coparenting was significantly associated with higher father involvement in coparenting (β = .24, p = .02), but not with mother involvement, β = .14, p = .25.

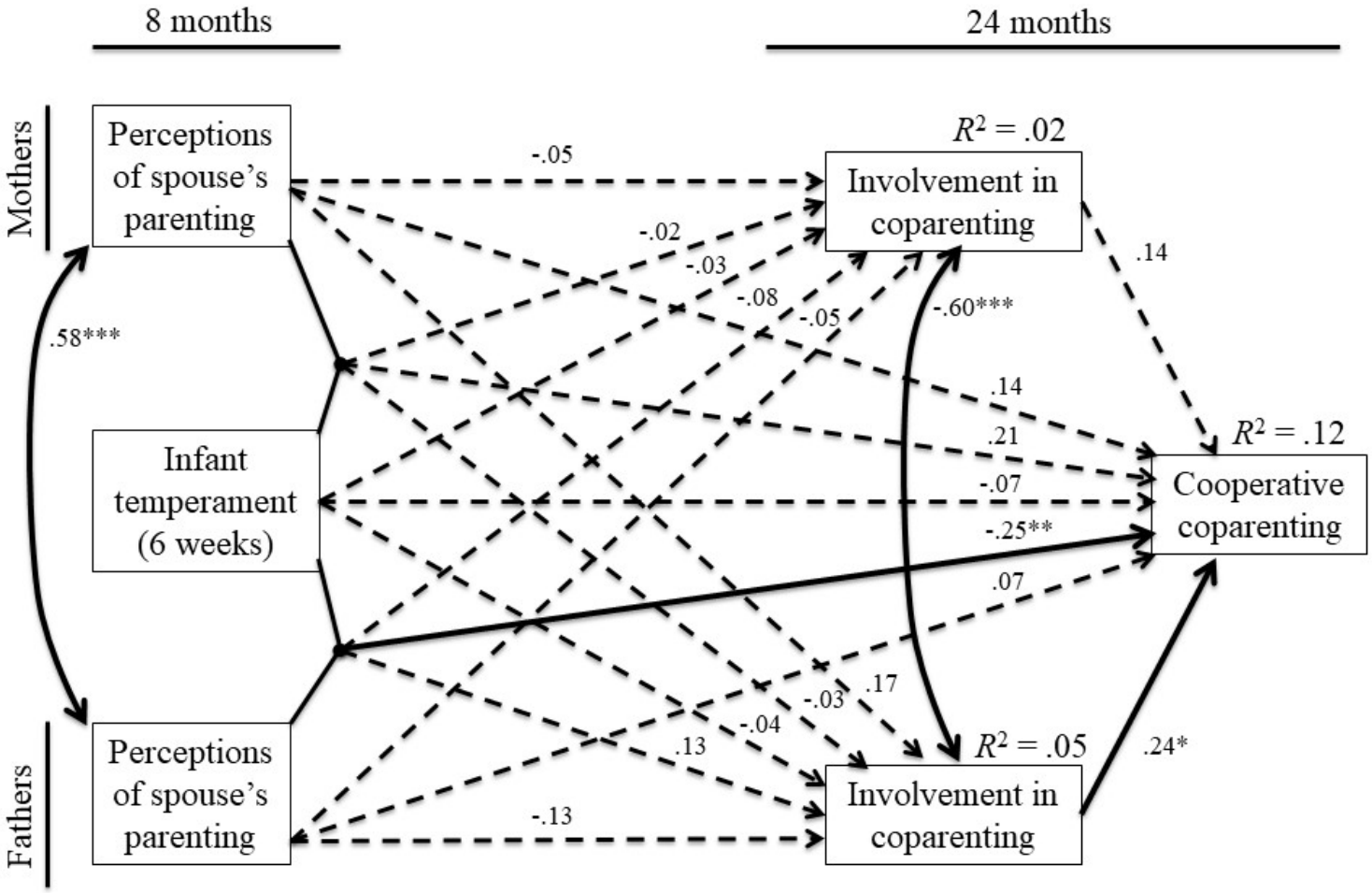

Figure 4. Predictors of Individual Involvement and Dyadic Cooperative Coparenting.
Solid lines denote significant paths. Standardized beta coefficients shown.
$\chi^2(15) = 12.31$, $p = .65$; RMSEA = .00 (90% CI = .00, .07); CFI = 1.00. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 4

Regression Predictors of Individual Parent Involvement and Cooperative Coparenting

	B	*SE*	β	95% CI β
Mother perceptions of spouses' parenting → Mother involvement	-.008	.03	-.05	-.36, .27
Mother perceptions of spouses' parenting → Father involvement	.03	.03	.17	-.12, .45
Mother perceptions of spouses' parenting → Cooperative coparenting	.03	.03	.14	-.13, .42
Father perceptions of spouses' parenting → Mother involvement	-.01	.04	-.05	-.31, .21
Father perceptions of spouses' parenting → Father involvement	-.04	.04	-.13	-.43, .17
Father perceptions of spouses' parenting → Cooperative coparenting	.02	.04	.07	-.15, .29
Infant temperament → Mother involvement	-.01	.03	-.03	-.21, .15
Infant temperament → Father involvement	-.01	.03	-.04	-.21, .14
Infant temperament → Cooperative temperament	-.03	.05	-.07	-.29, .15
(Mother perceptions * infant temperament) → Mother involvement	-.002	.01	-.02	-.32, .27
(Mother perceptions * infant temperament) → Father involvement	-.003	.01	-.03	-.29, .23
(Mother perceptions * infant temperament) → Cooperative coparenting	.02	.01	.21	-.05, .46
(Father perceptions * infant temperament) → Mother involvement	-.01	.02	-.08	-.30, .14
(Father perceptions * infant temperament) → Father involvement	.02	.02	.13	-.06, .31
(Father perceptions * infant temperament) → Cooperative coparenting	**-.05**	**.02**	**-.25****	**-.41, -.08**
Mother involvement → Cooperative coparenting	.16	.14	.14	-.10, .37
Father involvement → Cooperative coparenting	**.27**	**.12**	**.24***	**.03, .45**
Controls:				
Family income (8 mo.) → Mother perceptions	**.89**	**.31**	**.30*****	**.12, .48**
Family income (8 mo.) → Father perceptions	**.53**	**.24**	**.27***	**.05, .50**
Family income (24 mo.) → Mother involvement	.02	.07	.03	-.21, .28
Family income (24 mo.) → Father involvement	-.09	.06	-.15	-.36, .05
Family income (24 mo.) → Cooperative coparenting	-.02	.07	-.04	-.26, .19
Mother education → Mother perceptions	-.08	.24	-.03	-.18, .13
Father education → Father perceptions	-.20	.17	-.10	-.26, .06
Mother education → Mother involvement	-.04	.06	-.08	-.29, .13
Father education → Father involvement	.02	.06	.04	-.16, .23
Mother education → Cooperative coparenting	.008	.07	.01	-.21, .24

(Table 4 – continued)

Father education → Cooperative coparenting	.04	.08	.07	-.17, .31

Note. Bold denotes significant paths.
* $p < .05$, ** $p < .01$, *** $p < .001$

Table 5
Tests of Mediation for Structural Equation Models Predicting Individual Parent Involvement and Cooperative Coparenting

Path	Mplus Estimate of Indirect Effects				Sobel Test	
	Indirect	95% CI Indirect	Direct	Total	Z	*p*
Mother perceptions → Mother involvement → Cooperative coparenting	-.007	-.05, .04	.14	.17	-.28	.78
Mother perceptions → Father involvement → Cooperative coparenting	.04	-.04, .12	.14	.17	1.00	.32
Father perceptions → Mother involvement → Cooperative coparenting	-.007	-.04, .03	.07	.03	-.35	.72
Father perceptions → Father involvement → Cooperative coparenting	-.03	-.11, .05	.07	.03	-.81	.42
(Mother perceptions * Infant temperament) → Mother involvement → Cooperative coparenting	-.003	-.05, .04	.21	.20	-.15	.88
(Mother perceptions * Infant temperament) → Father involvement → Cooperative coparenting	-.007	-.07, .06	.21	.20	-.25	.80
(Father perceptions * Infant temperament) → Mother involvement → Cooperative coparenting	-.01	-.04, .02	-.25**	-.23*	-.61	.54
(Father perceptions * Infant temperament) → Father involvement → Cooperative coparenting	.03	-.02, .08	-.25**	-.23*	1.19	.24

Note. No evidence for partial mediation. Standardized effects presented for Mplus estimates.
* $p < .05$. ** $p < .01$. *** $p < .001$.

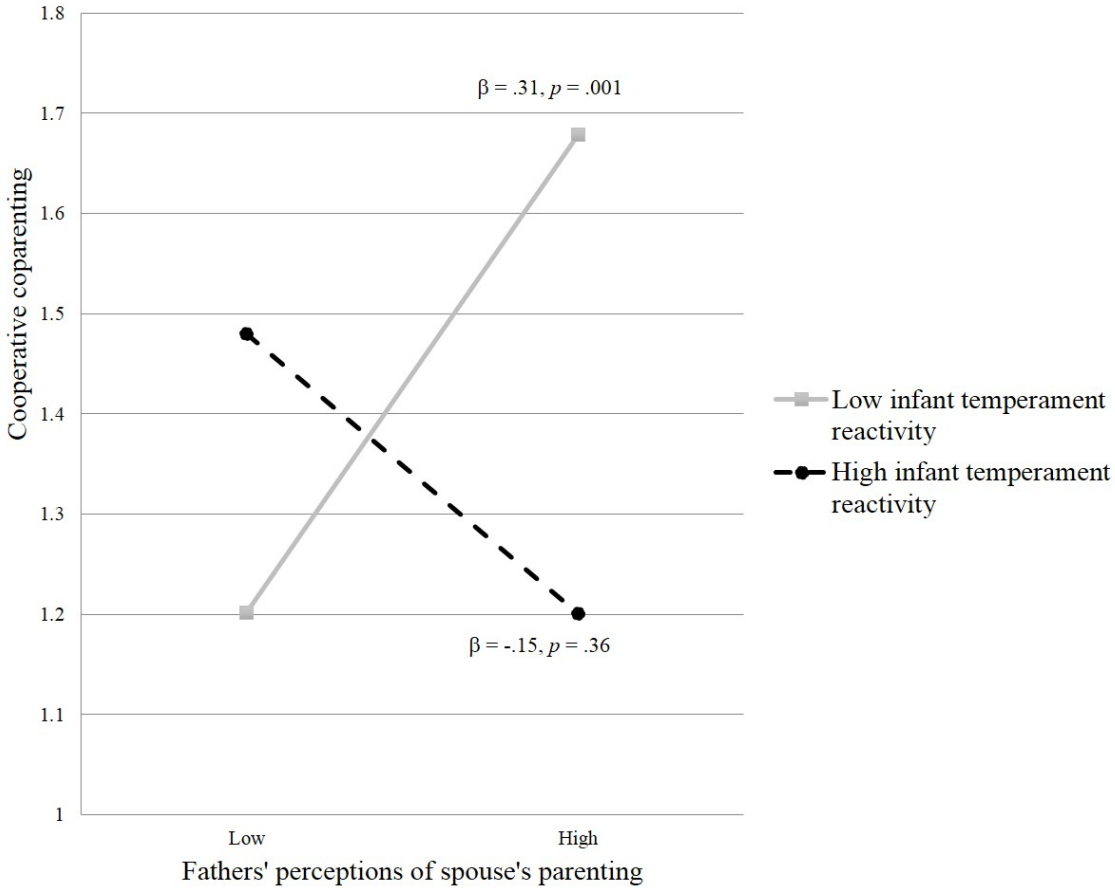

Figure 5.
Interaction of fathers' perceptions and infant temperament predicting cooperative coparenting in model with individual involvement as a mediator.
Solid lines denote significance.

As shown in Figure 4 and Table 4, neither parents' perceptions of their spouse's parenting nor infant temperament had a significant main effect on either individual involvement in coparenting or on dyadic cooperative coparenting. No other direct paths were significant, nor were any indirect paths significant. No support was found for any of the other hypotheses.

Model predicting dyadic child-centered coparenting. This model, shown in Figure 6 demonstrates a good model fit, $\chi^2(15) = 20.55$, $p = .59$; RMSEA = .00 (90% CI = .00, .08); CFI = 1.00. Table 6 shows the direct regression paths in this model, while Table 7 shows the indirect paths in this model. In support of Hypothesis 5, mothers' perceptions and infant temperament interacted to predict child-centered coparenting ($\beta = .30$, $p = .009$), and fathers' perceptions also interacted with infant temperament to predict child-centered coparenting, $\beta = -.27$, $p = .02$. As shown in Figure 7A, simple slopes analyses demonstrated that when infant temperament was more *challenging*, mothers' more positive perceptions of their husbands' parenting predicted higher child-centered coparenting ($\beta = .38$, $p = .006$), whereas mothers' perceptions were unrelated to cooperative coparenting when infant temperament was more easygoing, $\beta = -.11$ $p = .46$. In contrast, as shown in Figure 7B, when infant temperament was more *easygoing*, fathers' more positive perceptions of their wives' parenting predicted higher child-centered coparenting ($\beta = .33$, $p = .009$), whereas fathers' perceptions were unrelated to cooperative coparenting when infant temperament was challenging, $\beta = -.18$, $p = .32$.

Again, in support of Hypothesis 6, child-centered coparenting was significantly associated with fathers' greater involvement in coparenting ($\beta = .29$, $p = .01$), but not with mothers' greater involvement, $\beta = .14$, $p = .20$. Neither parents' perceptions of their spouse's parenting nor infant temperament had a main effect on either individual involvement in coparenting or on dyadic child-centered coparenting. No other support was found in this model for other direct paths, any indirect paths, or for other hypotheses.

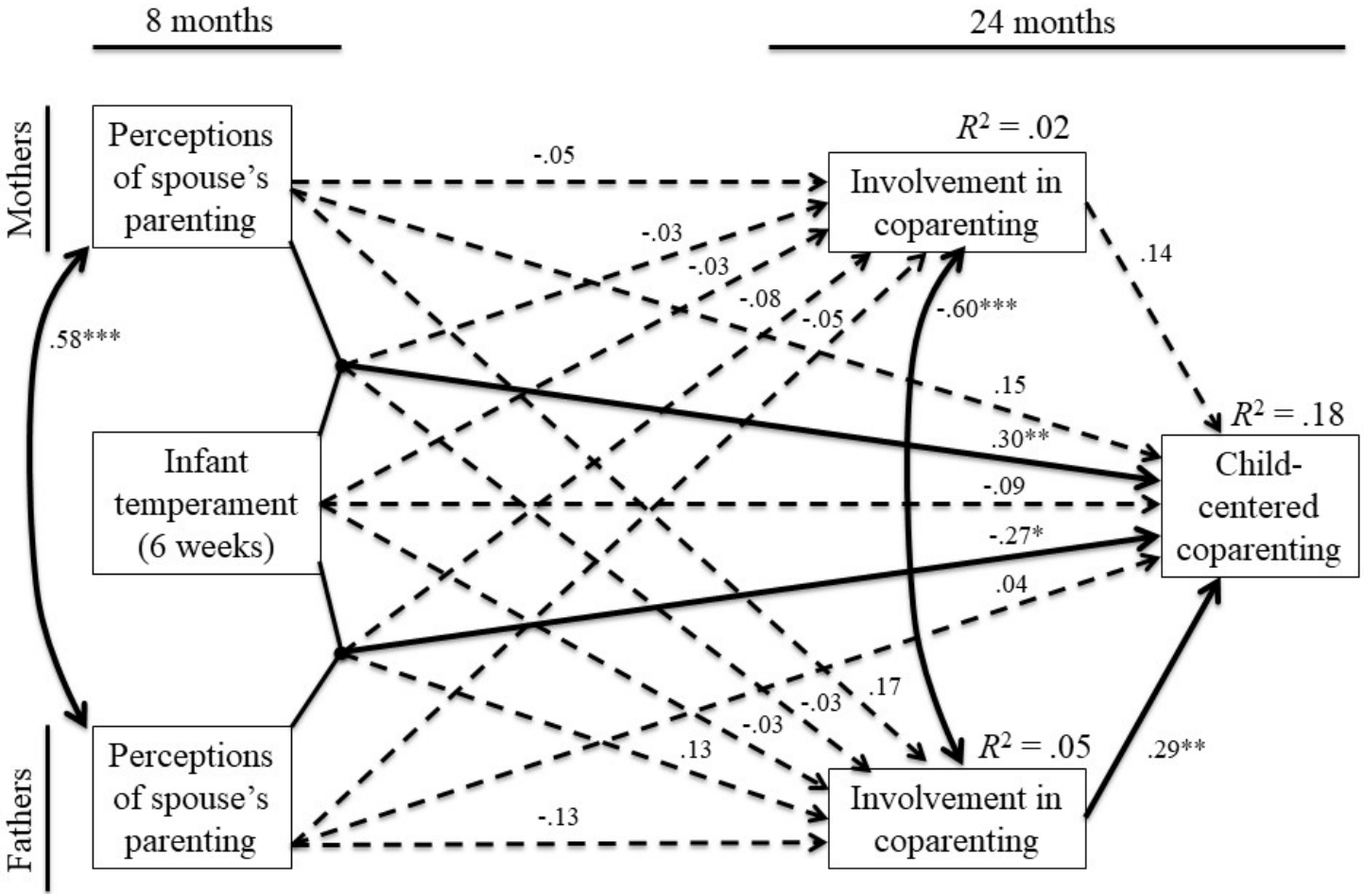

Figure 6. Predictors of Individual Involvement and Dyadic Child-Centered Coparenting.
Solid lines denote significant paths. Standardized beta coefficients shown.
$\chi^2(15) = 20.55$, $p = .59$; RMSEA = .00 (90% CI = .00, .08); CFI = 1.00. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 6

Regression Predictors of Individual Parent Involvement and Child-centered Coparenting

	B	*SE*	β	95% CI β
Mother perceptions of spouses' parenting → Mother involvement	-.009	.03	-.05	-.37, .26
Mother perceptions of spouses' parenting → Father involvement	.03	.03	.17	-.12, .45
Mother perceptions of spouses' parenting → Child-centered coparenting	.04	.03	.15	-.09, .40
Father perceptions of spouses' parenting → Mother involvement	-.01	.04	-.05	-.31, .21
Father perceptions of spouses' parenting → Father involvement	-.04	.04	-.13	-.43, .17
Father perceptions of spouses' parenting → Child-centered coparenting	.01	.04	.04	-.22, .30
Infant temperament → Mother involvement	-.01	.03	-.03	-.21, .15
Infant temperament → Father involvement	-.01	.03	-.03	-.20, .14
Infant temperament → Child-centered temperament	-.04	.05	-.09	-.31, .13
(Mother perceptions * infant temperament) → Mother involvement	-.003	.01	-.03	-.33, .27
(Mother perceptions * infant temperament) → Father involvement	-.003	.01	-.03	-.29, .23
(Mother perceptions * infant temperament) → Child-centered coparenting	**.03**	**.01**	**.30****	**.07, .52**
(Father perceptions * infant temperament) → Mother involvement	-.01	.02	-.08	-.30, .14
(Father perceptions * infant temperament) → Father involvement	.02	.02	.13	-.06, .32
(Father perceptions * infant temperament) → Child-centered coparenting	**-.06**	**.02**	**-.27***	**-.49, -.04**
Mother involvement → Child-centered coparenting	.18	.15	.14	-.08, .36
Father involvement → Child-centered coparenting	**.36**	**.14**	**.29****	**.07, .51**
Controls:				
Family income (8 mo.) → Mother perceptions	**.89**	**.31**	**.30*****	**.12, .48**
Family income (8 mo.) → Father perceptions	**.53**	**.24**	**.27***	**.05, .49**
Family income (24 mo.) → Mother involvement	.02	.07	.04	-.21, .28
Family income (24 mo.) → Father involvement	-.09	.06	-.15	-.36, .05
Family income (24 mo.) → Child-centered coparenting	.04	.08	.05	-.17, .27
Mother education → Mother perceptions	-.08	.24	-.03	-.18, .13
Father education → Father perceptions	-.20	.17	-.10	-.26, .06
Mother education → Mother involvement	-.04	.06	-.08	-.29, .12
Father education → Father involvement	.02	.06	.04	-.16, .23
Mother education → Child-centered coparenting	.02	.09	.03	-.23, .29

(Table 6 – continued)

Father education → Child-centered coparenting	.06	.07	.09	-.13, .31

Note. Bold denotes significant paths.
* $p < .05$, ** $p < .01$, *** $p < .001$

Table 7
Tests of Mediation for Structural Equation Models Predicting Individual Parent Involvement and Child-centered Coparenting

Path	Mplus Estimate of Indirect Effects				Sobel Test	
	Indirect	95% CI Indirect	Direct	Total	Z	*p*
Mother perceptions → Mother involvement → Child-centered coparenting	-.007	-.06, .04	.15	.20†	-.31	.76
Mother perceptions → Father involvement → Child-centered coparenting	.05	-.05, .14	.15	.20†	1.02	.31
Father perceptions → Mother involvement → Child-centered coparenting	-.007	-.05, .03	.04	-.004	-.36	.72
Father perceptions → Father involvement → Child-centered coparenting	-.04	-.13, .05	.04	-.004	-.79	.43
(Mother perceptions * Infant temperament) → Mother involvement → Child-centered coparenting	-.004	-.05, .04	.30**	.28*	-.23	.82
(Mother perceptions * Infant temperament) → Father involvement → Child-centered coparenting	-.01	-.09, .07	.30**	.28*	-.25	.80
(Father perceptions * Infant temperament) → Mother involvement → Child-centered coparenting	-.01	-.05, .02	-.27*	-.24*	-.59	.56
(Father perceptions * Infant temperament) → Father involvement → Child-centered coparenting	.04	-.02, .10	-.27*	-.24*	1.22	.22

Note. No evidence for partial mediation. Standardized effects presented for Mplus estimates.
† $p < .10$, * $p < .05$. ** $p < .01$. *** $p < .001$.

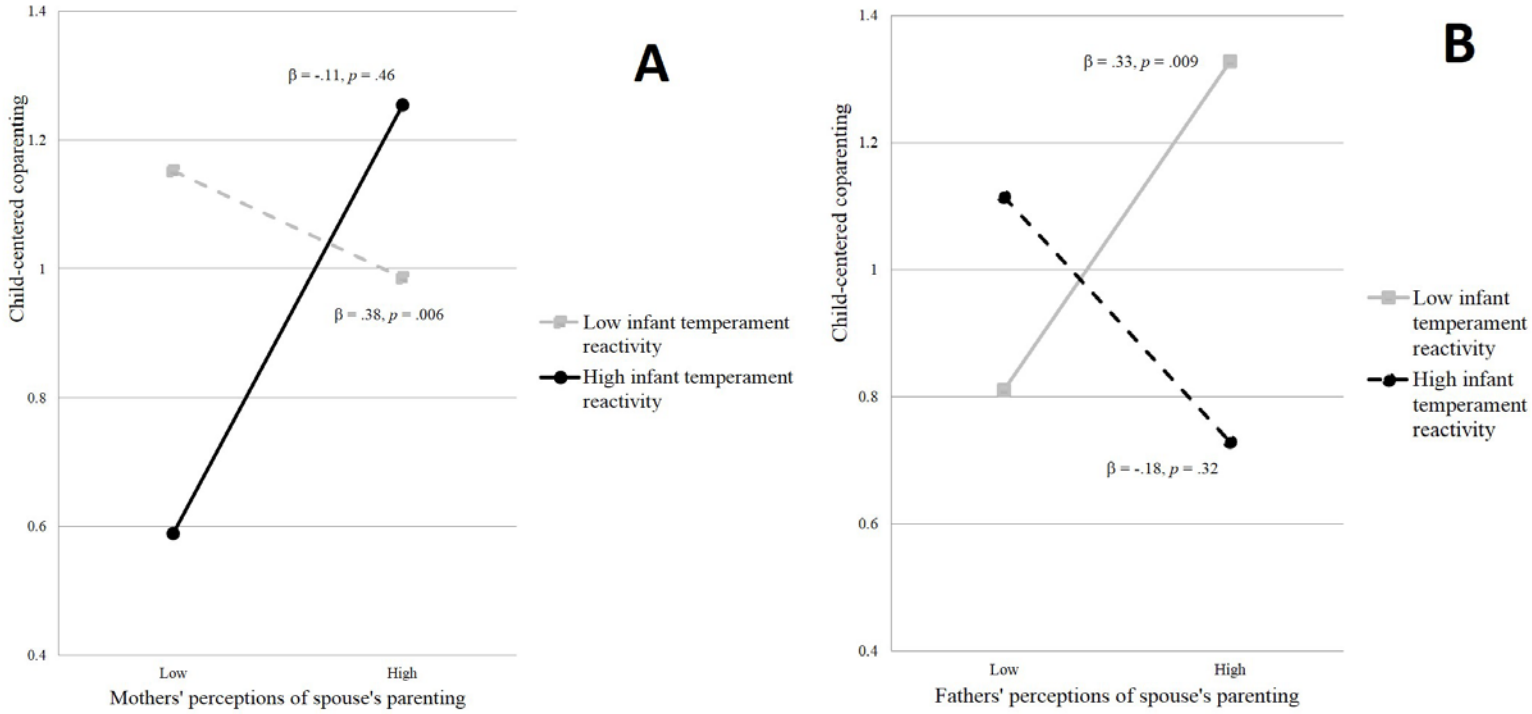

Figure 7.
Graphs of significant interactions in models with parents' involvement in coparenting as mediator and child-centered coparenting as outcome.
A. Interactions of infant temperament with mothers' perceptions predicting child-centered coparenting.
B. Interactions of infant temperament with fathers' perceptions predicting child-centered coparenting.
Solid lines denote significance.

Models with Parenting Support as a Mediator

Figures 8, 9, and 11 demonstrate the paths of three models in which infant temperament, both parents' perceptions of the other parent, and the interactions of temperament and parents' perceptions, were expected to predict individual parent support in coparenting, which in turn was predicted to function as the mediator to predict dyadic coparenting. Models with parenting support as a mediator are shown in Figure 8 (predicting competitive coparenting), Figure 9 (predicting cooperative coparenting), and Figure 11 (predicting child-centered coparenting).

Model predicting dyadic competitive coparenting. This model, show in Figure 8, demonstrated a poor model fit, $\chi^2(15) = 27.81$, $p = .02$; RMSEA = .08 (90% CI = .03, .13); CFI = .87. Table 8 shows the direct regression paths in this model, while Table 9 shows the indirect paths. Given the poor model fit, the results for this model will not be interpreted further.

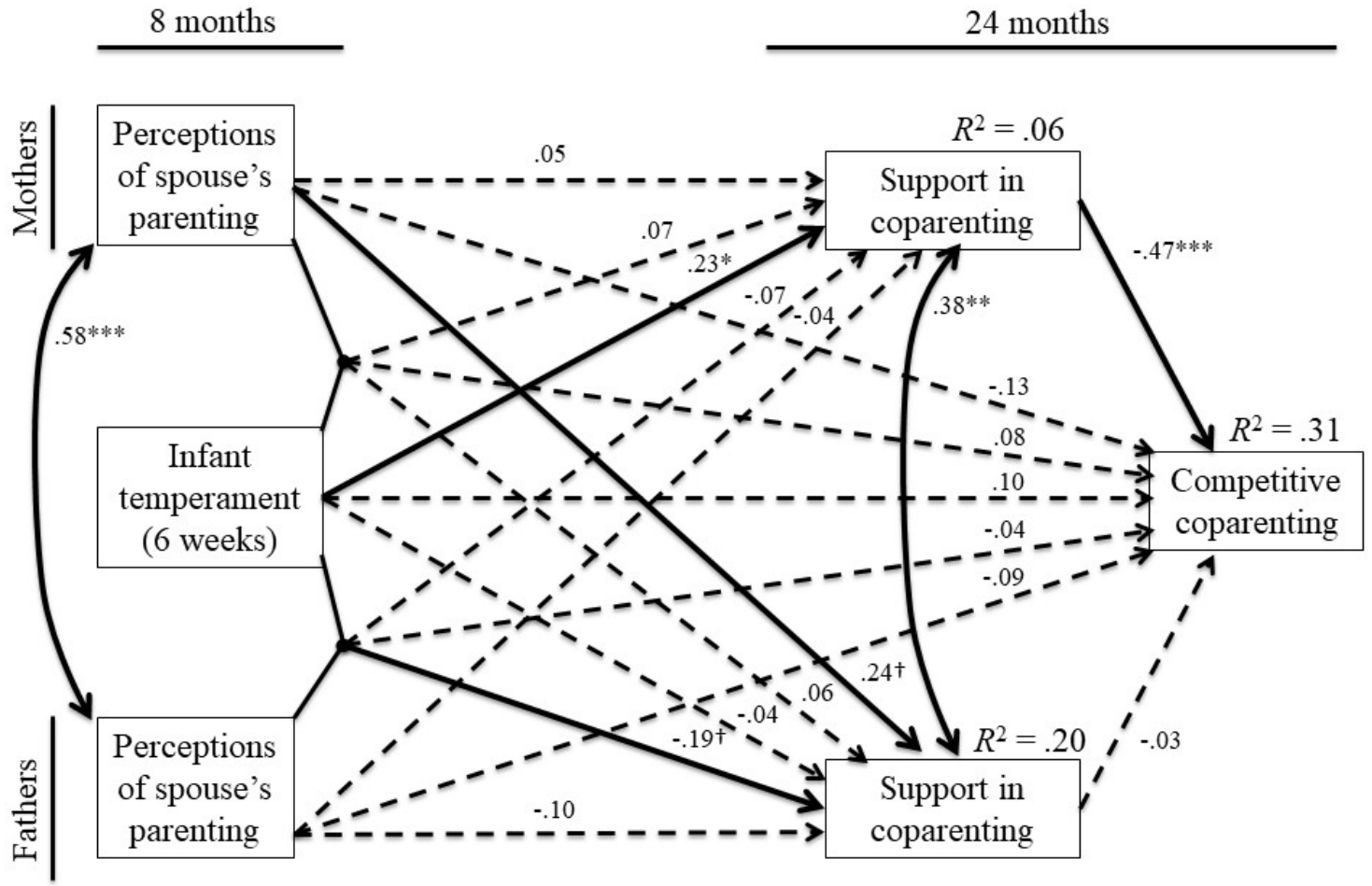

Figure 8. Predictors of Individual Support and Dyadic Competitive Coparenting.
Solid lines denote significant paths. Standardized beta coefficients shown.
$\chi^2(15) = 27.81$, $p = .02$; RMSEA = .08 (90% CI = .03, .13); CFI = .87. † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 8

Regression Predictors of Individual Parent Support and Competitive Coparenting

	B	*SE*	β	95% CI β
Mother perceptions of spouses' parenting → Mother support	.01	.05	.05	-.41, .51
Mother perceptions of spouses' parenting → Father support	**.03**	**.02**	**.24†**	**-.04, .51**
Mother perceptions of spouses' parenting → Competitive coparenting	-.03	.03	-.13	-.33, .07
Father perceptions of spouses' parenting → Mother support	-.01	.05	-.04	-.34, .37
Father perceptions of spouses' parenting → Father support	-.02	.03	-.10	-.33, .14
Father perceptions of spouses' parenting → Competitive coparenting	-.03	.04	-.09	-.29, .11
Infant temperament → Mother support	**.10**	**.04**	**.23***	**.007, .43**
Infant temperament → Father support	-.01	.03	-.04	-.24, .16
Infant temperament → Competitive temperament	.05	.06	.10	-.12, .32
(Mother perceptions * infant temperament) → Mother support	.007	.02	.07	-.26, .39
(Mother perceptions * infant temperament) → Father support	.004	.01	.06	-.16, .28
(Mother perceptions * infant temperament) → Competitive coparenting	.01	.01	.08	-.10, .26
(Father perceptions * infant temperament) → Mother support	-.01	.02	-.07	-.29, .16
(Father perceptions * infant temperament) → Father support	**-.02**	**.02**	**-.19†**	**-.39, .02**
(Father perceptions * infant temperament) → Competitive coparenting	-.01	.02	-.04	-.18, .10
Mother support → Competitive coparenting	**-.58**	**.15**	**-.47*****	**-.69, -.25**
Father support → Competitive coparenting	-.05	.21	-.03	-.25, .20
Controls:				
Family income (8 mo.) → Mother perceptions	**.90**	**.31**	**.30*****	**.12, .48**
Family income (8 mo.) → Father perceptions	**.53**	**.24**	**.27***	**.05, .49**
Family income (24 mo.) → Mother support	.03	.09	.05	-.23, .32
Family income (24 mo.) → Father support	**.15**	**.05**	**.34*****	**.14, .55**
Family income (24 mo.) → Competitive coparenting	-.10	.10	-.13	-.37, .11
Mother education → Mother perceptions	-.08	.24	-.03	-.18, .13
Father education → Father perceptions	-.20	.17	-.10	-.26, .06
Mother education → Mother support	-.05	.06	-.08	-.28, .12
Father education → Father support	-.06	.05	-.15	-.36, .07

(Table 8 – continued)

Mother education → Competitive coparenting	.03	.08	.04	-.15, .24
Father education → Competitive coparenting	.09	.07	.12	-.04, .28

Note. Bold denotes significant paths.
† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 9
Tests of Mediation for Structural Equation Models Predicting Individual Parent Support and Competitive Coparenting

Path	Mplus Estimate of Indirect Effects				Sobel Test	
	Indirect	95% CI Indirect	Direct	Total	Z	*p*
Mother perceptions → Mother support → Competitive coparenting	-.02	-.24, .20	-.13	-.16	-.20	.84
Mother perceptions → Father support → Competitive coparenting	-.006	-.06, .05	-.13	-.16	-.21	.83
Father perceptions → Mother support → Competitive coparenting	.02	-.13, .16	-.09	-.07	.24	.81
Father perceptions → Father support → Competitive coparenting	.002	-.02, .02	-.09	-.07	.21	.83
(Mother perceptions * Infant temperament) → Mother support → Competitive coparenting	-.03	-.19, .13	.08	.05	-.41	.68
(Mother perceptions * Infant temperament) → Father support → Competitive coparenting	-.001	-.02, .01	.08	.05	-.20	.84
(Father perceptions * Infant temperament) → Mother support → Competitive coparenting	.03	-.08, .14	-.04	-.005	.60	.55
(Father perceptions * Infant temperament) → Father support → Competitive coparenting	.005	-.04, .05	-.04	-.005	.21	.83

Note. No evidence for partial mediation. Standardized effects presented for Mplus estimates.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Model predicting dyadic cooperative coparenting. This model, shown in Figure 9, demonstrates a good model fit, $\chi^2(15) = 21.87$, $p = .11$; RMSEA = .06 (90% CI = .01, .11); CFI = .91. Table 10 shows the direct regression paths in this model, while Table 11 shows the indirect paths in this model. As shown in Figure 9 and in Table 10, mothers' higher perceptions of fathers' parenting were marginally associated with greater fathers' support of mothers during coparenting, $\beta = .24$, $p = .09$, but the effect of fathers' perceptions on mothers' support of fathers did not emerge as significant, providing provided partial support for Hypothesis 1. More challenging infant temperament was also predictive of higher mother support ($\beta = .23$, $p = .04$), but not father support, which contradicts Hypothesis 3.

Regarding significant interactions, fathers' perceptions of their spouse's coparenting interacted marginally with infant temperament to predict father support, $\beta = -.19$, $p = .08$, providing some support for Hypothesis 4. As shown in Figure 10A, a crossover interaction was found. Simple slopes analyses indicated that when infant temperament was more challenging, a marginally significant relation between fathers' perceptions of their wives' parenting and fathers' support of their wives during coparenting was found ($\beta = -.25$, $p = .098$), indicating that fathers' more negative perceptions tended to be associated with fathers' greater support of their wives during coparenting of an infant with a challenging temperament. However, when infants were more easygoing, this relation was non-significant, $\beta = .09$, $p = .57$.

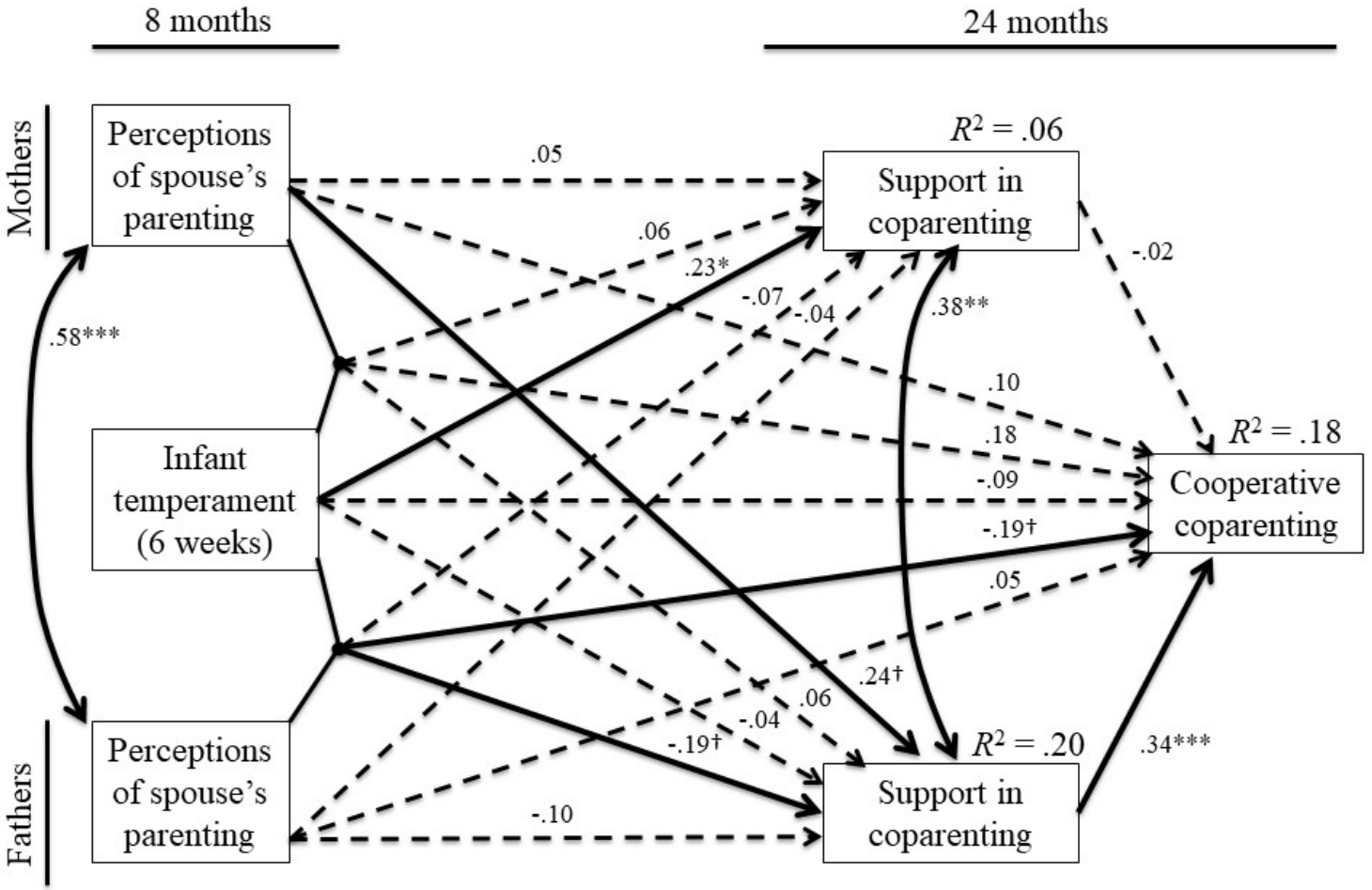

Figure 9. Predictors of Individual Support and Dyadic Cooperative Coparenting.
Solid lines denote significant paths. Standardized beta coefficients shown.
$\chi^2(15) = 21.87$, $p = .11$; RMSEA = .06 (90% CI = .01, .11); CFI = .91. † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 10

Regression Predictors of Individual Parent Support and Cooperative Coparenting

	B	*SE*	β	95% CI β
Mother perceptions of spouses' parenting → Mother support	.01	.05	.05	-.41, .51
Mother perceptions of spouses' parenting → Father support	**.03**	**.02**	**.24†**	**-.04, .52**
Mother perceptions of spouses' parenting → Cooperative coparenting	.02	.02	.10	-.11, .32
Father perceptions of spouses' parenting → Mother support	-.01	.05	-.04	-.34, .27
Father perceptions of spouses' parenting → Father support	-.02	.03	-.10	-.33, .14
Father perceptions of spouses' parenting → Cooperative coparenting	.02	.04	.05	-.18, .28
Infant temperament → Mother support	**.10**	**.04**	**.23***	**.01, .44**
Infant temperament → Father support	-.01	.03	-.04	-.24, .16
Infant temperament → Cooperative temperament	-.04	.05	-.09	-.31, .14
(Mother perceptions * infant temperament) → Mother support	.006	.02	.06	-.27, .39
(Mother perceptions * infant temperament) → Father support	.004	.01	.06	-.16, .28
(Mother perceptions * infant temperament) → Cooperative coparenting	.02	.01	.18	-.04, .41
(Father perceptions * infant temperament) → Mother support	-.01	.02	-.07	-.29, .16
(Father perceptions * infant temperament) → Father support	**-.02**	**.02**	**-.19†**	**-.39, .02**
(Father perceptions * infant temperament) → Cooperative coparenting	**-.04**	**.02**	**-.19†**	**-.38, .008**
Mother support → Cooperative coparenting	-.02	.12	-.02	-.26, .22
Father support → Cooperative coparenting	**.49**	**.20**	**.34***	**.07, .60**
Controls:				
Family income (8 mo.) → Mother perceptions	**.90**	**.31**	**.30*****	**.12, .48**
Family income (8 mo.) → Father perceptions	**-.53**	**.24**	**.27***	**.05, .49**
Family income (24 mo.) → Mother support	.02	.09	.04	-.24, .31
Family income (24 mo.) → Father support	**.14**	**.05**	**.34*****	**.13, .54**
Family income (24 mo.) → Cooperative coparenting	-.11	.07	-.18	-.40, .05
Mother education → Mother perceptions	-.09	.24	-.03	-.18 .13
Father education → Father perceptions	-.20	.17	-.10	-.26, .06
Mother education → Mother support	-.05	.06	-.08	-.28, .12
Father education → Father support	-.06	.05	-.14	-.36, .07

(Table 10 – continued)

Mother education → Cooperative coparenting	-.005	.07	-.008	-.22, .21
Father education → Cooperative coparenting	.08	.08	.13	-.12, .37

Note. Bold denotes significant paths.
† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 11
Tests of Mediation for Structural Equation Models Predicting Individual Parent Support and Cooperative Coparenting

	Mplus Estimate of Indirect Effects				Sobel Test	
Path	Indirect	95% CI Indirect	Direct	Total	Z	*p*
Mother perceptions → Mother support → Cooperative coparenting	-.001	-.02, .01	.10	.18	-.13	.89
Mother perceptions → Father support → Cooperative coparenting	.08	-.04, .21	.10	.18	1.32	.19
Father perceptions → Mother support → Cooperative coparenting	.001	-.01, .01	.05	.02	.14	.89
Father perceptions → Father support → Cooperative coparenting	-.03	-.12, .05	.05	.02	-.73	.46
(Mother perceptions * Infant temperament) → Mother support → Cooperative coparenting	-.001	-.02, .02	.18	.20	-.16	.88
(Mother perceptions * Infant temperament) → Father support → Cooperative coparenting	.02	-.05, .09	.18	.20	.49	.62
(Father perceptions * Infant temperament) → Mother support → Cooperative coparenting	.001	-.02, .02	-.19†	-.25**	.17	.87
(Father perceptions * Infant temperament) → Father support → Cooperative coparenting	-.06	-.15, .02	-.19†	-.25**	-1.28	.20

Note. No evidence for partial mediation. Standardized effects presented for Mplus estimates.
† $p < .10$, * $p < .05$. ** $p < .01$. *** $p < .001$.

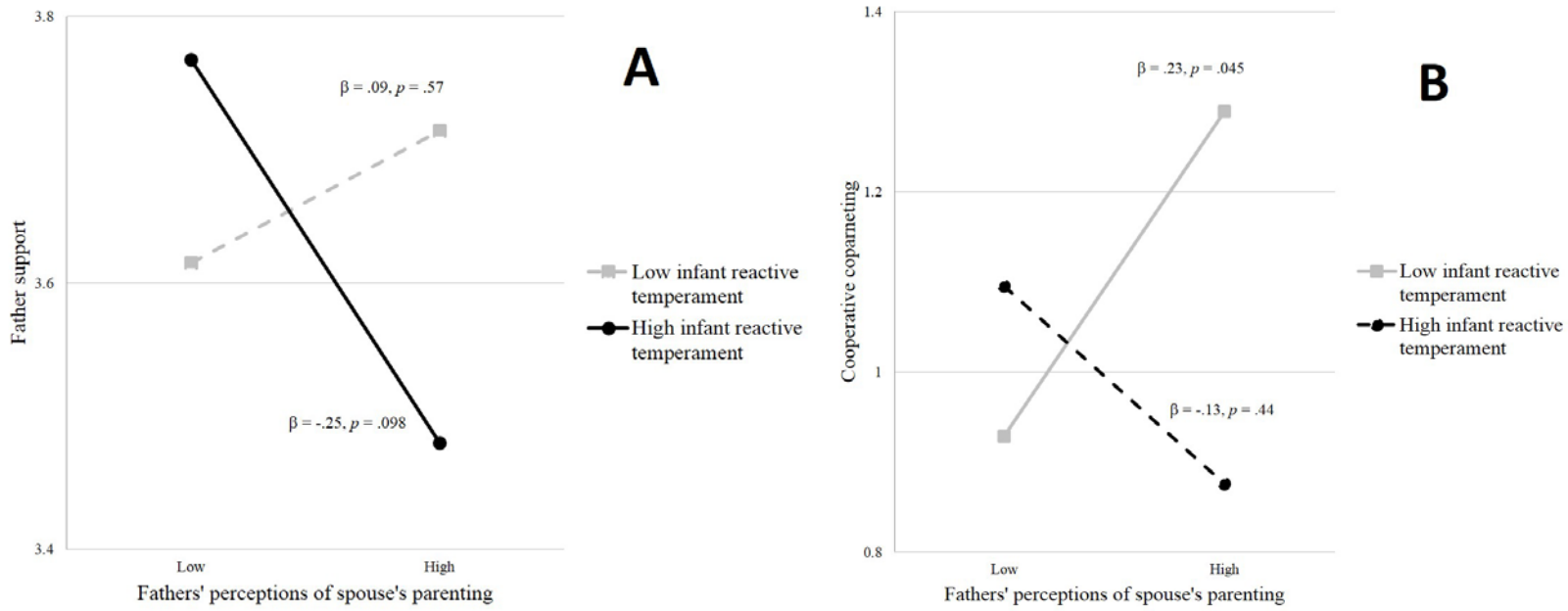

Figure 10.
Graphs of significant interactions in model with parents' support of their spouse as a mediator and cooperative coparenting as outcome.
A. Interactions of infant temperament with fathers' perceptions predicting fathers' support.
B. Interactions of infant temperament with mothers' perceptions predicting cooperative coparenting.
Solid lines denote significance.

Fathers' perceptions of their spouse's coparenting also interacted marginally with infant temperament to predict cooperative coparenting, providing some support for Hypothesis 5. As shown in Figure 10B, simple slopes analyses demonstrated that when infant temperament was more easygoing, fathers' more positive perceptions of their wives' parenting predicted higher cooperative coparenting ($\beta = .23$, $p = .045$), whereas fathers' perceptions were unrelated to cooperative coparenting when infants were more challenging, $\beta = -.13$, $p = .44$.

Finally, cooperative coparenting was positively associated with fathers' support of mothers ($\beta = .34$, $p = .01$), but not with mothers' support of fathers ($\beta = -.02$, $p = .86$), which provides support for Hypothesis 6. As shown in Table 11, no indirect paths were significant. Thus, no support was found for Hypotheses 2 or 7 in this model.

Model predicting dyadic child-centered coparenting. This model, shown in Figure 11 demonstrates a marginal model fit, $\chi^2(15) = 23.11$, $p = .08$; RMSEA = .07 (90% CI = .00, .12); CFI = .90. Table 12 shows the direct regression paths in this model, while Table 13 shows the indirect paths in this model. As shown in Figure 11 and in Table 12, mothers' higher perceptions of fathers' parenting were marginally associated with greater fathers' support, $\beta = .24$, $p = .09$, providing partial support for Hypothesis 1, as the effect of fathers' perceptions on mothers' support did not emerge as significant. Contrary to Hypothesis 3, more challenging infant temperament was predictive of higher mother support of fathers ($\beta = .23$, $p = .04$), but not of father support of mothers.

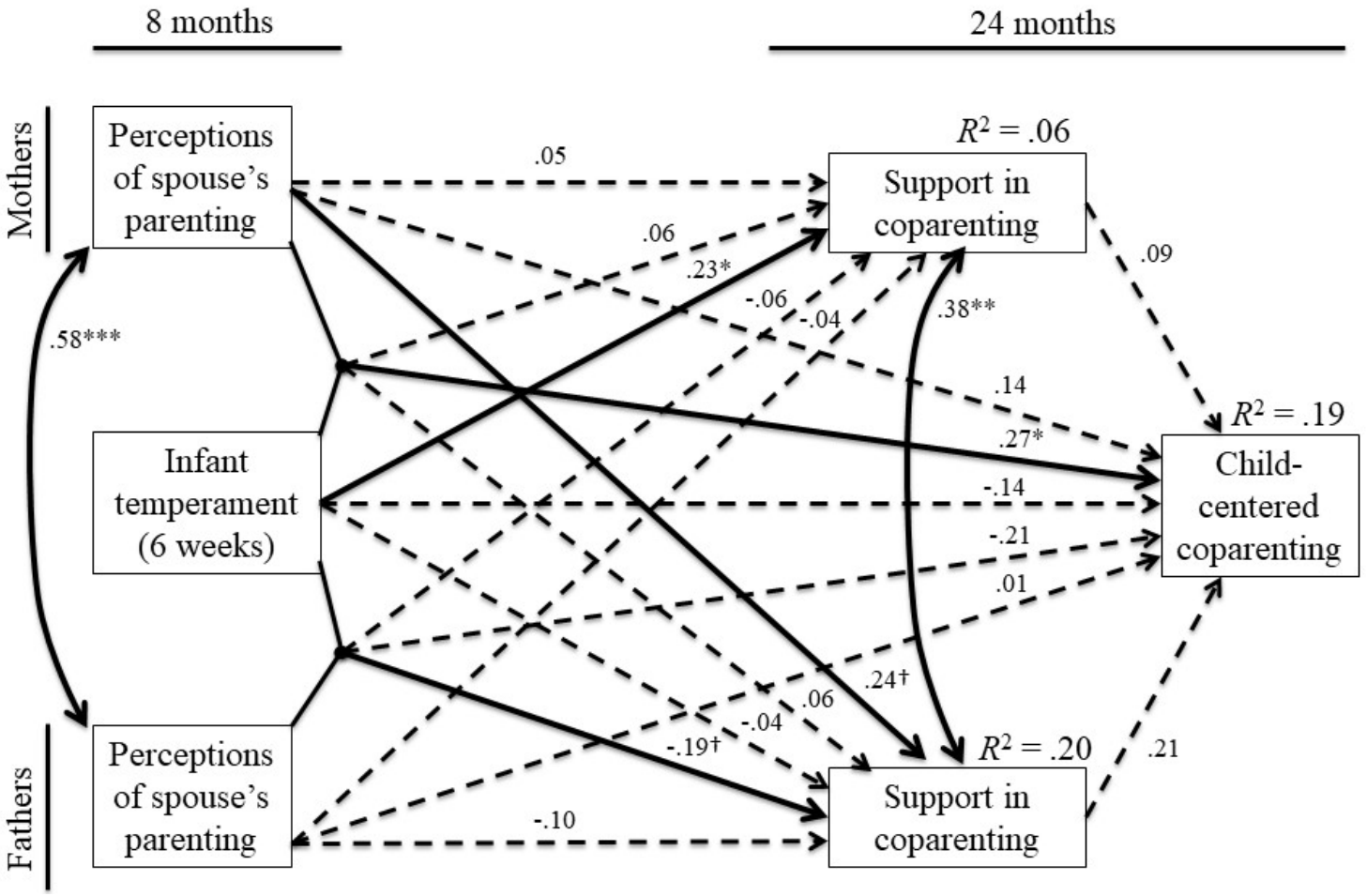

Figure 11. Predictors of Individual Support and Dyadic Child-Centered Coparenting.
Solid lines denote significant paths. Standardized beta coefficients shown.
$\chi^2(15) = 23.11$, $p = .08$; RMSEA = .07 (90% CI = .00, .12); CFI = .90. † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 12

Regression Predictors of Individual Parent Support and Child-centered Coparenting

	B	*SE*	β	95% CI β
Mother perceptions of spouses' parenting → Mother support	.01	.05	.05	-.42, .51
Mother perceptions of spouses' parenting → Father support	**.03**	**.02**	**.24†**	**-.04, .52**
Mother perceptions of spouses' parenting → Child-centered coparenting	.03	.02	.14	-.06, .35
Father perceptions of spouses' parenting → Mother support	-.01	.02	-.04	-.34, .27
Father perceptions of spouses' parenting → Father support	-.03	.02	-.10	-.33, .14
Father perceptions of spouses' parenting → Child-centered coparenting	.004	.05	.01	-.26, .29
Infant temperament → Mother support	**.10**	**.04**	**.23***	**.02, .44**
Infant temperament → Father support	-.01	.03	-.04	-.24, .15
Infant temperament → Child-centered temperament	-.06	.05	-.14	-.35, .08
(Mother perceptions * infant temperament) → Mother support	.006	.02	.06	-.27, .38
(Mother perceptions * infant temperament) → Father support	.004	.01	.06	-.16, .29
(Mother perceptions * infant temperament) → Child-centered coparenting	**.03**	**.01**	**.27***	**.05, .48**
(Father perceptions * infant temperament) → Mother support	-.01	.02	-.06	-.29, .17
(Father perceptions * infant temperament) → Father support	**-.03**	**.02**	**-.19†**	**-.39, .02**
(Father perceptions * infant temperament) → Child-centered coparenting	-.04	.03	-.21	-.47, .06
Mother support → Child-centered coparenting	.10	.12	.09	-.11, .29
Father support → Child-centered coparenting	.34	.20	.21	-.04, .46
Controls:				
Family income (8 mo.) → Mother perceptions	**.90**	**.31**	**.30*****	**.12, .48**
Family income (8 mo.) → Father perceptions	**.53**	**.24**	**.27***	**.05, .49**
Family income (24 mo.) → Mother support	.03	.09	.04	-.23, .31
Family income (24 mo.) → Father support	**.15**	**.05**	**.34*****	**.14, .54**
Family income (24 mo.) → Child-centered coparenting	-.05	.09	-.07	-.31, .18
Mother education → Mother perceptions	-.09	.24	-.03	-.18, .13
Father education → Father perceptions	-.20	.17	-.10	-.26, .06
Mother education → Mother support	-.05	.06	-.08	-.28, .12
Father education → Father support	-.06	.05	-.14	-.36, .07
Mother education → Child-centered coparenting	.006	.09	.009	-.25, .26

(Table 12 – continued)

Father education → Child-centered coparenting	.09	.07	.13	-.08, .34

Note. Bold denotes significant paths.
† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 13
Tests of Mediation for Structural Equation Models Predicting Individual Parent Support and Child-centered Coparenting

Path	Mplus Estimate of Indirect Effects				Sobel Test	
	Indirect	95% CI Indirect	Direct	Total	Z	*p*
Mother perceptions → Mother support → Child-centered coparenting	.004	-.04, .05	.14	.20†	.20	.84
Mother perceptions → Father support → Child-centered coparenting	.05	-.04, .14	.14	.20†	1.15	.25
Father perceptions → Mother support → Child-centered coparenting	-.003	-.03, .03	.01	-.01	-.22	.83
Father perceptions → Father support → Child-centered coparenting	-.02	-.08, .04	.01	-.01	-.73	.47
(Mother perceptions * Infant temperament) → Mother support → Child-centered coparenting	.005	-.03, .04	.27*	.28**	.33	.74
(Mother perceptions * Infant temperament) → Father support → Child-centered coparenting	.01	-.03, .06	.27*	.28**	.48	.63
(Father perceptions * Infant temperament) → Mother support → Child-centered coparenting	-.006	-.03, .02	.21	-.25*	-.47	.64
(Father perceptions * Infant temperament) → Father support → Child-centered coparenting	-.04	-.10, .02	.21	-.25*	-1.14	.25

Note. No evidence for partial mediation. Standardized effects presented for Mplus estimates.
† $p < .10$, * $p < .05$. ** $p < .01$. *** $p < .001$.

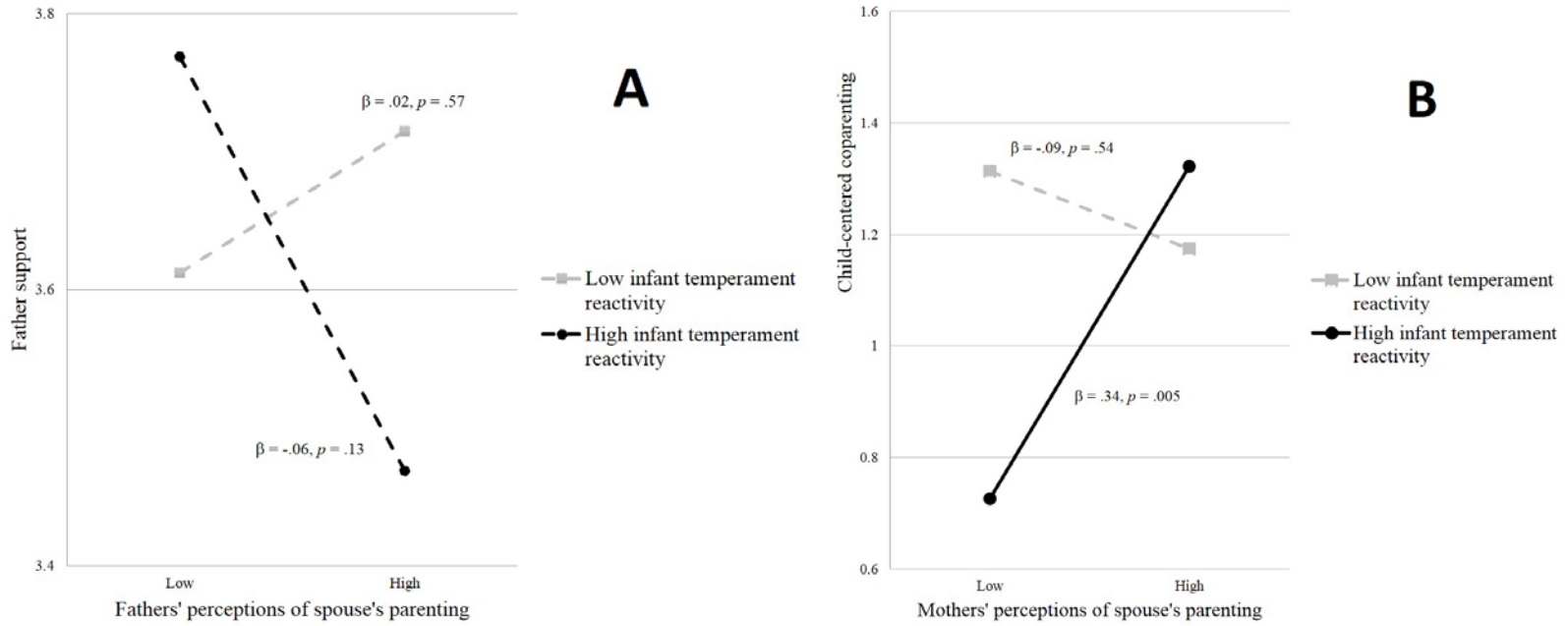

Figure 12.
Graphs of significant interactions in models with parents' support of their spouse as mediator and child-centered coparenting as outcome.
A. Interactions of infant temperament with fathers' perceptions predicting fathers' support.
B. Interactions of infant temperament with mothers' perceptions predicting child-centered coparenting.
Solid lines denote significance.

Regarding significant interactions, fathers' perceptions of their spouse's coparenting interacted marginally with infant temperament to predict father support, β = -.19, *p* = .07, providing some support for Hypothesis 4. As shown in Figure 12A, however, simple slopes analyses indicated that the relation of fathers' perceptions of their wives' parenting and fathers' support of their wives was not significant when infant temperament was more challenging (β = -.06, *p* = .13) or more easygoing, β = .02, *p* = .57.

Mothers' perceptions and infant temperament also interacted to predict child-centered coparenting, β = .27, *p* = .02, providing some support for Hypothesis 5. As shown in Figure 12B, simple slopes analyses demonstrated that when infant temperament was more challenging, mothers' more positive perceptions of fathers' parenting predicted higher child-centered coparenting (β = .34, *p* = .005), whereas when infant temperament was more easygoing, no significant relation was found between mothers' perceptions and child-centered coparenting, β = -.09, *p* = .54. As shown in Table 13, no indirect paths were significant. Thus, no support was found for Hypotheses 2, 6, or 7 in this model.

Models with Parental Warmth as a Mediator

Figures 13, 15, and 17 demonstrate the paths of the three models in which infant temperament, both parents' perceptions of the other parent, and the interactions of temperament and parents' perceptions, were expected to predict individual parent warmth in coparenting, which in turn was predicted to function as the mediator to predict dyadic coparenting. Models with parental warmth as a mediator are shown in Figure 13

predicting competitive coparenting), Figure 15 (predicting cooperative coparenting), and Figure 17 (predicting child-centered coparenting).

Model predicting dyadic competitive coparenting. This model, show in Figure 13, demonstrated a good model fit, $\chi^2(15) = 22.19$, $p = .10$; RMSEA = .06 (90% CI = .00, .11); CFI = .91. Table 14 shows the direct regression paths in this model, while Table 15 shows the indirect paths. In support of Hypothesis 4, infant temperament showed a significant interactive effect with mothers' perceptions to predict fathers' warmth (β = .31, p = .004), and with fathers' perceptions to predict mothers' warmth, β = -.21, p = .03. As shown in Figure 14A, simple slopes analyses demonstrated that when infants were more easygoing, fathers' more positive perceptions of mothers' parenting predicting higher maternal warmth in coparenting (β = .21, p = .06), whereas when infants were more challenging, fathers' perceptions of mothers' parenting were unrelated to maternal warmth, and the relation between fathers' perceptions and mothers' warmth trended in the opposite direction, β = -.20, p = .32. In contrast, as shown in Figure 14B, when infants were more challenging, mothers' more positive perceptions of fathers' parenting related to higher paternal warmth during coparenting (β = .43, $p < .001$), but when infants were more easygoing, mothers' perceptions of fathers' parenting were unrelated to paternal warmth, β = -.08, p = .62.

As shown in Figure 13 and in Table 14, higher competitive coparenting was significantly associated with lower maternal warmth (β = -.21, p = .04), but not with fathers' warmth (β = -.12, p = .30), which provided partial support for Hypothesis 6.

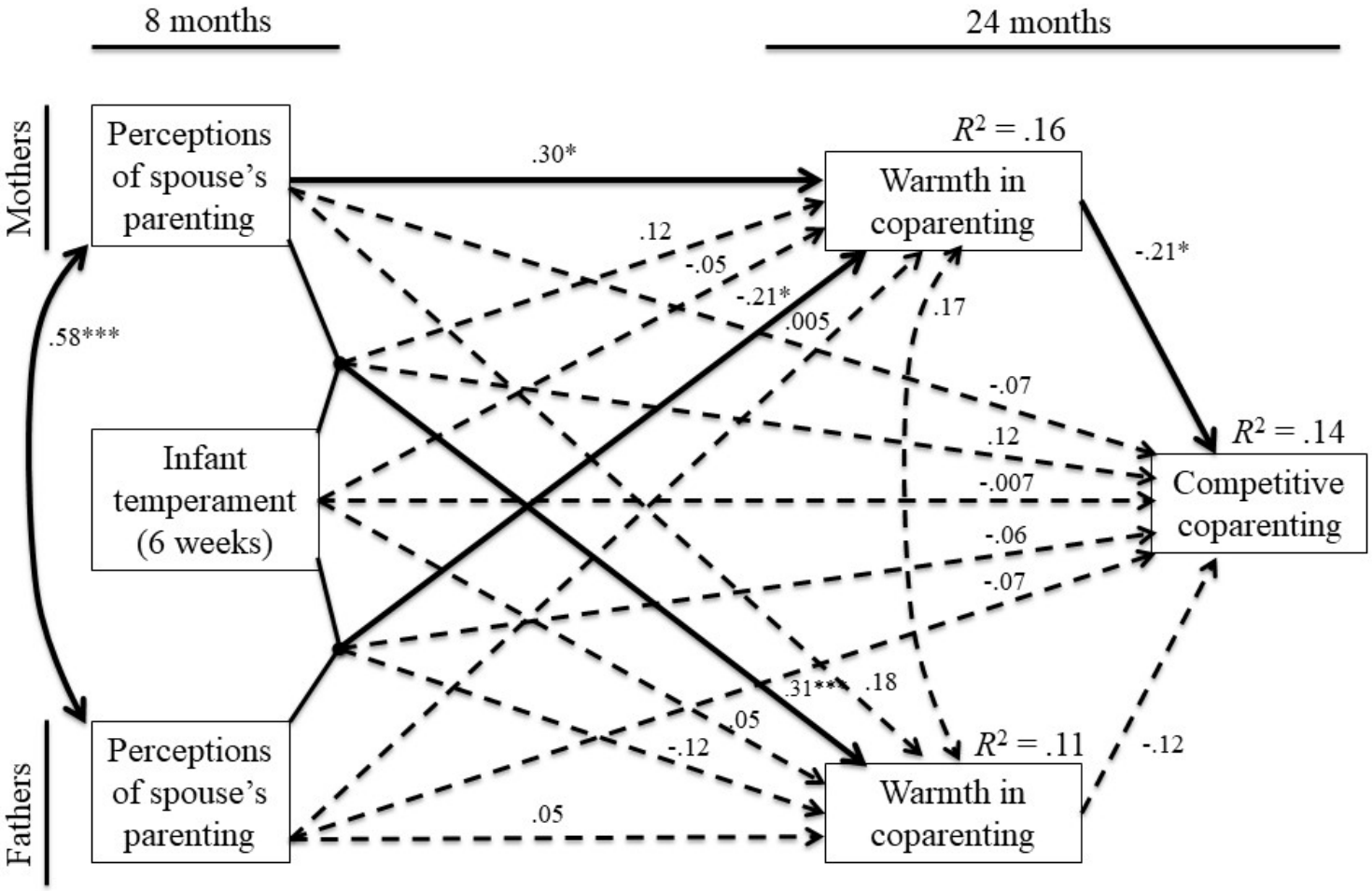

Figure 13. Predictors of Individual Warmth and Dyadic Competitive Coparenting.
Solid lines denote significant paths. Standardized beta coefficients shown.
$\chi^2(15) = 22.19$, $p = .10$; RMSEA = .06 (90% CI = .00, .11); CFI = .91. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 14

Regression Predictors of Individual Parent Warmth and Competitive Coparenting

	B	*SE*	β	95% CI β
Mother perceptions of spouses' parenting → Mother warmth	**.08**	**.04**	**.30***	**.07, .54**
Mother perceptions of spouses' parenting → Father warmth	.05	.04	.18	-.07, .44
Mother perceptions of spouses' parenting → Competitive coparenting	-.02	.04	-.07	-.36, .21
Father perceptions of spouses' parenting → Mother warmth	.002	.05	.005	-.26, .27
Father perceptions of spouses' parenting → Father warmth	.02	.06	.05	-.23, .32
Father perceptions of spouses' parenting → Competitive coparenting	-.03	.05	-.07	-.31, .17
Infant temperament → Mother warmth	-.03	.05	-.05	-.24, .14
Infant temperament → Father warmth	.03	.05	.05	-.13, .22
Infant temperament → Competitive temperament	.004	.07	.007	-.25, .26
(Mother perceptions * infant temperament) → Mother warmth	.02	.01	.12	-.10, .32
(Mother perceptions * infant temperament) → Father warmth	**.04**	**.01**	**.31****	**.10, .53**
(Mother perceptions * infant temperament) → Competitive coparenting	.02	.01	.12	-.08, .33
(Father perceptions * infant temperament) → Mother warmth	**-.05**	**.03**	**-.21***	**-.40, -.02**
(Father perceptions * infant temperament) → Father warmth	-.03	.03	-.12	-.31, .07
(Father perceptions * infant temperament) → Competitive coparenting	-.02	.02	-.06	-.22, .10
Mother warmth → Competitive coparenting	**-.20**	**.10**	**-.21***	**-.40, -.01**
Father warmth → Competitive coparenting	-.11	.11.	-.12	-.34, .11
Controls:				
Family income (8 mo.) → Mother perceptions	**.89**	**.31**	**.30*****	**.12, .48**
Family income (8 mo.) → Father perceptions	**.53**	**.24**	**.27***	**.05, .49**
Family income (24 mo.) → Mother warmth	.04	.08	.06	-.14, .25
Family income (24 mo.) → Father warmth	-.08	.09	-.10	-.31, .11
Family income (24 mo.) → Competitive coparenting	-.12	.10	-.15	-.39, .10
Mother education → Mother perceptions	-.09	.24	-.03	-.18, .13
Father education → Father perceptions	-.20	.17	-.10	-.26, .06
Mother education → Mother warmth	.07	.08	.08	-.13, .29
Father education → Father warmth	.07	.10	.09	-.14, .31

(Table 14 – continued)

Mother education → Child-centered coparenting	.08	.08	.10	-.10, .30
Father education → Competitive coparenting	.09	.08	.11	-.08, .30

Note. Bold denotes significant paths.
† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 15
Tests of Mediation for Structural Equation Models Predicting Individual Parent Warmth and Competitive Coparenting

	Mplus Estimate of Indirect Effects				Sobel Test	
Path	Indirect	95% CI Indirect	Direct	Total	Z	*p*
Mother perceptions → Mother warmth → Competitive coparenting	-.06	-.14, .02	-.07	-.16	-1.47	.14
Mother perceptions → Father warmth → Competitive coparenting	-.02	-.07, .03	-.07	-.16	-.81	.42
Father perceptions → Mother warmth → Competitive coparenting	-.001	-.06, .05	-.07	-.08	-.04	.96
Father perceptions → Father warmth → Competitive coparenting	-.005	-.04, .03	-.07	-.08	-.31	.76
(Mother perceptions * Infant temperament) → Mother warmth → Competitive coparenting	-.02	-.07, .02	.12	.06	-.99	.32
(Mother perceptions * Infant temperament) → Father warmth → Competitive coparenting	-.04	-.11, .04	.12	.06	-.94	.35
(Father perceptions * Infant temperament) → Mother warmth → Competitive coparenting	.04	-.01, .10	-.06	-.004	1.36	.17
(Father perceptions * Infant temperament) → Father warmth → Competitive coparenting	.01	-.02, .05	-.06	-.004	.76	.45

Note. No evidence for partial mediation. Standardized effects presented for Mplus estimates.
* $p < .05$. ** $p < .01$. *** $p < .001$.

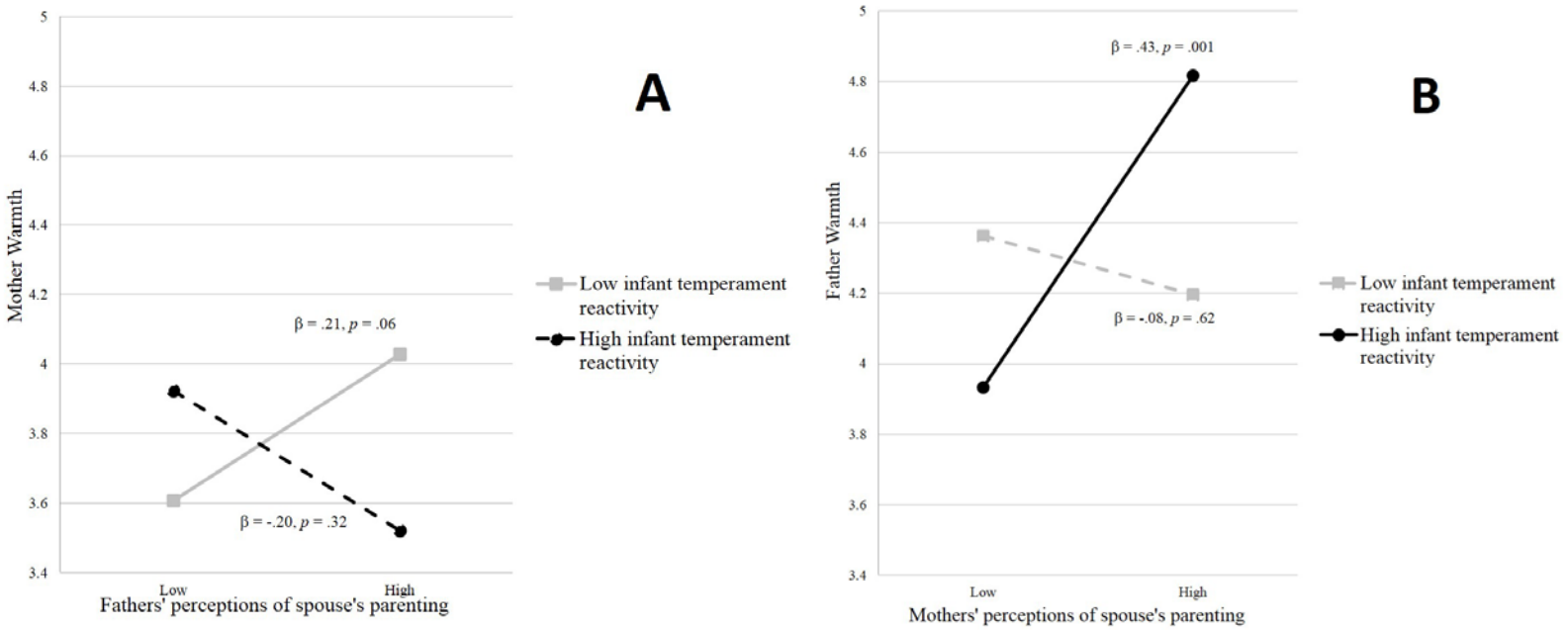

Figure 14.
Graphs of significant interactions in models with parents' warmth as a mediator and competitive coparenting as outcome.
A. Interactions of infant temperament with fathers' perceptions predicting mothers' warmth.
B. Interactions of infant temperament with mothers' perceptions predicting fathers' warmth.
Solid lines denote significance.

Mothers' perceptions of their spouse's coparenting were also predictive of their own warmth in coparenting (β = .30, *p* = .01), but the same did not emerge for fathers' perceptions and their own warmth, β = .05, *p* = .75. As shown in Table 15, no indirect paths were significant. Thus, no support was found for Hypotheses 1-3, Hypothesis 7, or other exploratory paths in this model.

Model predicting dyadic cooperative coparenting. This model, show in Figure 15, demonstrated a good model fit, $\chi^2(15) = 13.06$, *p* = .60; RMSEA = .00 (90% CI = .00, .07); CFI = 1.00. Table 16 shows the direct regression paths in this model, while Table 17 shows the indirect paths. In support of Hypothesis 4, infant temperament showed a significant interactive effect with mothers' perceptions to predict fathers' warmth (β = .31, *p* = .005), and with fathers' perceptions to predict mothers' warmth, β = -.20, *p* = .04. As shown in Figure 16A, simple slopes analyses demonstrated that when infant temperament was *more easygoing*, fathers' more positive perceptions of mothers' caregiving marginally predicted higher maternal warmth in coparenting (β = .21, *p* = .08), but when infants were *more challenging*, the relation between fathers' perceptions and mothers' warmth was not significant, β = -.19, *p* = .36. In contrast, as shown in Figure 16B, mothers' more positive perceptions of fathers' caregiving significantly predicted higher paternal warmth in coparenting when infant temperament was *more challenging* (β = .43, *p* < .001), but when infants were *more easygoing*, mothers' perceptions of fathers' parenting were unrelated to maternal warmth, β = -.08, *p* = .64.

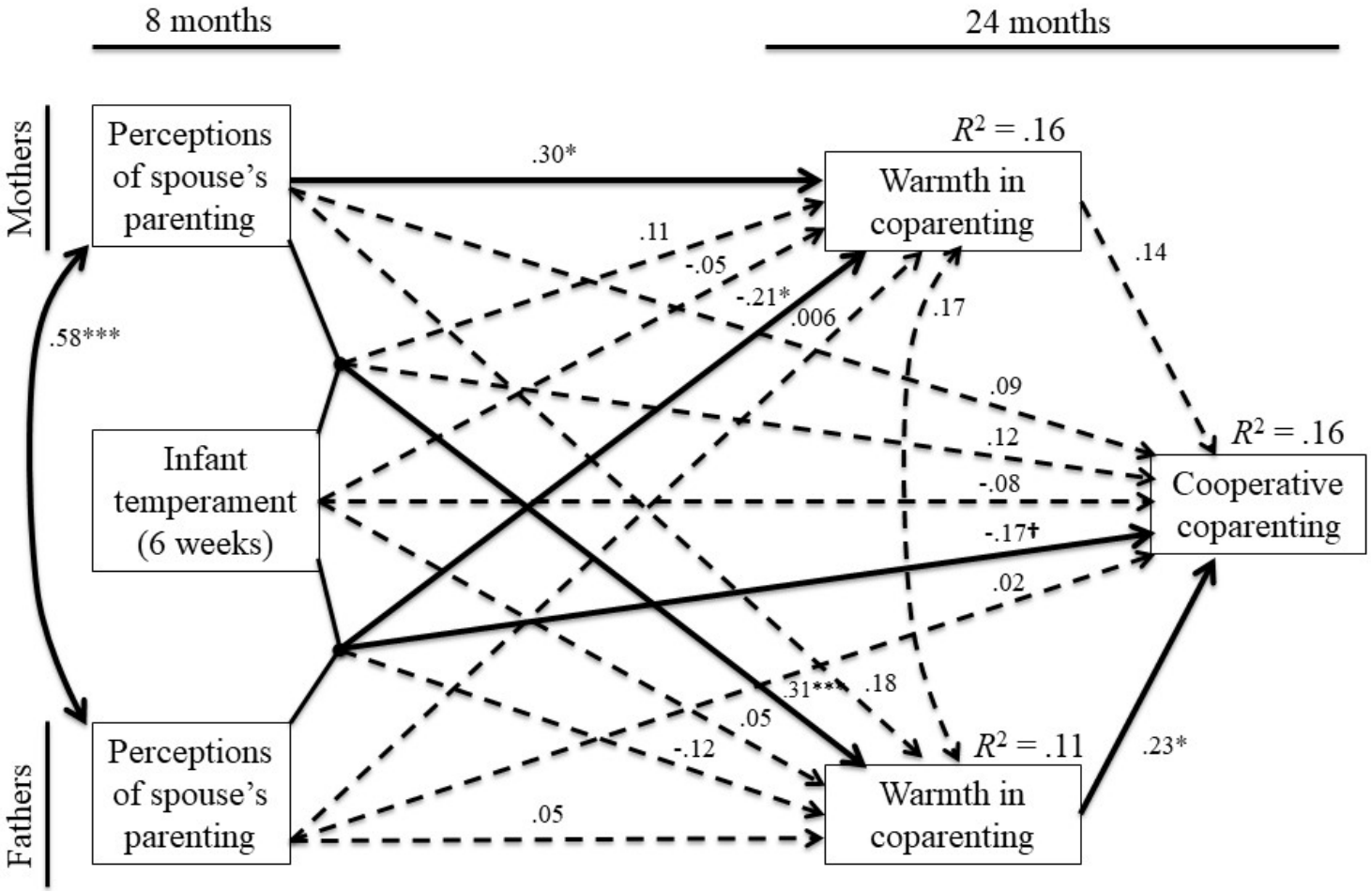

Figure 15. Predictors of Individual Warmth and Dyadic Cooperative Coparenting.
Solid lines denote significant paths. Standardized beta coefficients shown.
$\chi^2(15) = 13.06$, $p = .60$; RMSEA = .00 (90% CI = .00, .07); CFI = 1.00. † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 16

Regression Predictors of Individual Parent Warmth and Cooperative Coparenting

	B	*SE*	β	95% CI β
Mother perceptions of spouses' parenting → Mother warmth	**.08**	**.04**	**.30***	**.07, .54**
Mother perceptions of spouses' parenting → Father warmth	.05	.04	.18	-.07, .44
Mother perceptions of spouses' parenting → Cooperative coparenting	.02	.03	.09	-.16, .34
Father perceptions of spouses' parenting → Mother warmth	.002	.05	.006	-.26, .27
Father perceptions of spouses' parenting → Father warmth	.02	.06	.05	-.23, .32
Father perceptions of spouses' parenting → Cooperative coparenting	.007	.04	.02	-.21, .26
Infant temperament → Mother warmth	-.03	.05	-.05	-.24, .14
Infant temperament → Father warmth	.03	.05	.05	-.13, .22
Infant temperament → Cooperative temperament	-.03	.05	-.08	-.31, .15
(Mother perceptions * infant temperament) → Mother warmth	.02	.01	.11	-.10, .32
(Mother perceptions * infant temperament) → Father warmth	**.04**	**.01**	**.31****	**.10, .52**
(Mother perceptions * infant temperament) → Cooperative coparenting	.01	.01	.12	-.15, .38
(Father perceptions * infant temperament) → Mother warmth	**-.05**	**.03**	**-.21***	**-.40, -.01**
(Father perceptions * infant temperament) → Father warmth	-.03	.03	-.12	-.31, .07
(Father perceptions * infant temperament) → Cooperative coparenting	**-.03**	**.02**	**-.17†**	**-.36, .03**
Mother warmth → Cooperative coparenting	.11	.09	.14	-.07, .35
Father warmth → Cooperative coparenting	**.17**	**.09**	**.23***	**.002, .45**
Controls:				
Family income (8 mo.) → Mother perceptions	**.90**	**.31**	**.30*****	**.12, .48**
Family income (8 mo.) → Father perceptions	**.53**	**.24**	**.27***	**.05, .49**
Family income (24 mo.) → Mother warmth	.04	.08	.05	-.14, .25
Family income (24 mo.) → Father warmth	-.09	.09	-.10	-.31, .11
Family income (24 mo.) → Cooperative coparenting	-.03	.07	-.05	-.27, .16
Mother education → Mother perceptions	-.09	.24	-.03	-.18, .13
Father education → Father perceptions	-.20	.17	-.10	-.26, .06
Mother education → Mother warmth	.07	.08	.08	-.13, .29
Father education → Father warmth	.07	.10	.09	-.14, .31

(Table 16 – continued)

Mother education → Cooperative coparenting	-.005	.07	-.008	-.22, .21
Father education → Cooperative coparenting	.04	.08	.07	-.17, .31

Note. Bold denotes significant paths.
† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 17
Tests of Mediation for Structural Equation Models Predicting Individual Parent Warmth and Cooperative Coparenting

	Mplus Estimate of Indirect Effects				Sobel Test	
Path	Indirect	95% CI Indirect	Direct	Total	Z	*p*
Mother perceptions → Mother warmth → Cooperative coparenting	.04	-.03, .12	.09	.17	1.12	.26
Mother perceptions → Father warmth → Cooperative coparenting	.04	-.04, .12	.09	.17	1.13	.26
Father perceptions → Mother warmth → Cooperative coparenting	.001	-.04, .04	.02	.03	.04	.97
Father perceptions → Father warmth → Cooperative coparenting	.01	-.05, .07	.02	.03	.32	.75
(Mother perceptions * Infant temperament) → Mother warmth → Cooperative coparenting	.02	-.02, .05	.12	.20	.86	.39
(Mother perceptions * Infant temperament) → Father warmth → Cooperative coparenting	.07	-.007, .15	.12	.20	1.61	.11
(Father perceptions * Infant temperament) → Mother warmth → Cooperative coparenting	-.03	-.08, .02	-.17†	-.22*	-1.05	.30
(Father perceptions * Infant temperament) → Father warmth → Cooperative coparenting	-.03	-.07, .02	-.17†	-.22*	-1.01	.31

Note. No evidence for partial mediation. Standardized effects presented for Mplus estimates.
† $p < .10$, * $p < .05$. ** $p < .01$. *** $p < .001$.

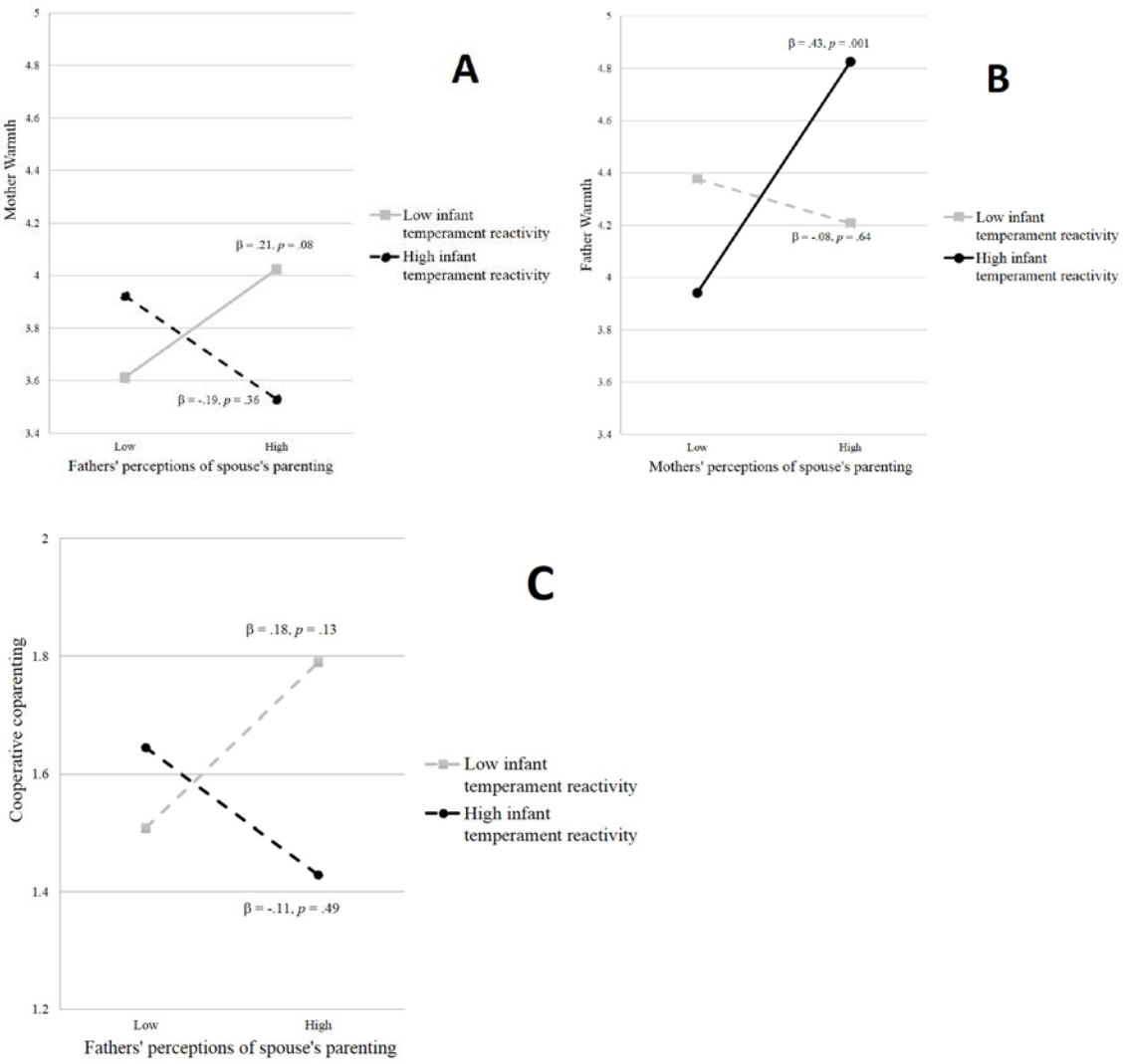

Figure 16.

Graphs of significant interactions in models with parents' warmth as a mediator and cooperative coparenting as outcome.

A. Interactions of infant temperament with fathers' perceptions predicting mothers' warmth.

B. Interactions of infant temperament with mothers' perceptions predicting fathers' warmth.

C. Interactions of infant temperament with fathers' perceptions predicting cooperative coparenting. Solid lines denote significance.

In support of Hypothesis 5, fathers' perceptions of their mothers' parenting marginally interacted with infant temperament to predict cooperative coparenting, β = -.17, *p* = .09. As shown in Figure 16C, however, cooperative coparenting did not differ in simple slopes across fathers perceptions when infant temperament was more challenging (β = -.11, *p* = .49) or more easygoing, β = .18, *p* = .13.

As shown in Figure 15 and in Table 16, cooperative coparenting was significantly associated with fathers' greater warmth in coparenting (β = .23, *p* = .048), but not with mothers' greater warmth (β = .14, *p* = .18), which provided partial support for Hypothesis 6. Mothers' perceptions of their spouse's coparenting were also predictive of their own warmth in coparenting (β = .30, *p* = .01), but the same did not emerge for fathers' perceptions and their own warmth, β = .05, *p* = .75. As shown in Table 15, no indirect paths were significant. Thus, no support was found for Hypotheses 1-3, Hypothesis 7, or other exploratory paths in this model.

Model predicting dyadic child-centered coparenting. This model, shown in Figure 17, demonstrated a good model fit, $\chi^2(15) = 15.99$, *p* = .38; RMSEA = .02 (90% CI = .00, .09); CFI = .99. Table 18 shows the direct regression paths in this model, while Table 19 shows the indirect paths. Both parents' perceptions of their spouses' parenting interacted with infant temperament to predict individual warmth in coparenting, via partner effects, providing support for Hypothesis 4. Infant temperament showed a significant interactive effect with mothers' perceptions to predict fathers' warmth (β = .31, *p* = .005), and with fathers' perceptions to predict mothers' warmth, β = -.21, *p* = .04.

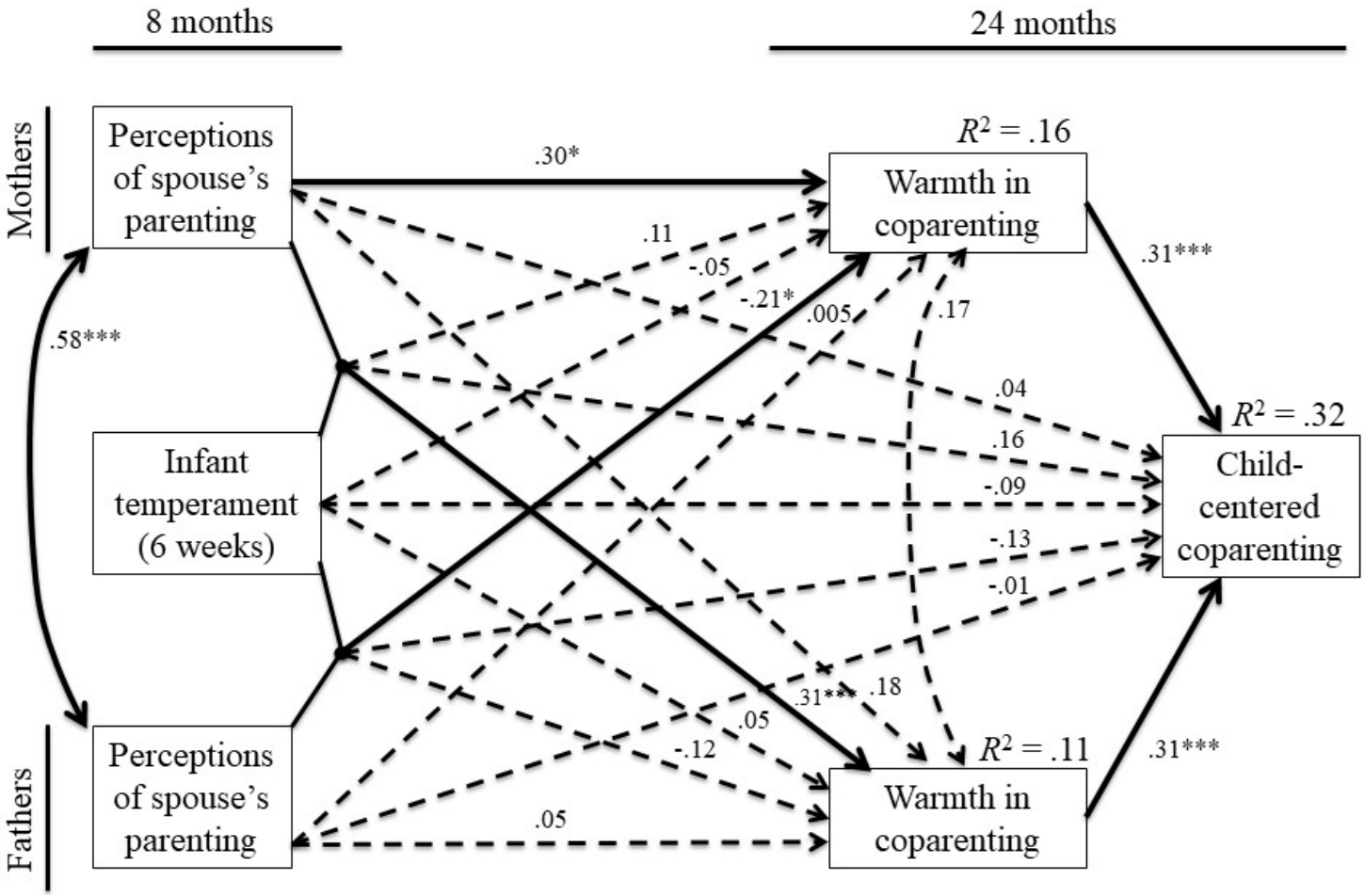

Figure 17. Predictors of Individual Warmth and Dyadic Child-Centered Coparenting.
Solid lines denote significant paths. Standardized beta coefficients shown.
$\chi^2(15) = 15.99$, $p = .38$; RMSEA = .02 (90% CI = .00, .09); CFI = .99. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 18

Regression Predictors of Individual Parent Warmth and Child-centered Coparenting

	B	*SE*	β	95% CI β
Mother perceptions of spouses' parenting → Mother warmth	**.08**	**.04**	**.30***	**.07, .54**
Mother perceptions of spouses' parenting → Father warmth	.05	.04	.18	-.07, .44
Mother perceptions of spouses' parenting → Child-centered coparenting	.009	.03	.04	-.18, .26
Father perceptions of spouses' parenting → Mother warmth	.002	.05	.005	-.26, .27
Father perceptions of spouses' parenting → Father warmth	.02	.06	.05	-.23, .32
Father perceptions of spouses' parenting → Child-centered coparenting	-.003	.04	-.01	-.26, .24
Infant temperament → Mother warmth	-.03	.05	-.05	-.24, .14
Infant temperament → Father warmth	.03	.05	.05	-.13, .23
Infant temperament → Child-centered temperament	-.04	.05	-.09	-.30, .12
(Mother perceptions * infant temperament) → Mother warmth	.02	.01	.11	-.10, .33
(Mother perceptions * infant temperament) → Father warmth	**.04**	**.01**	**.31****	**.09, .52**
(Mother perceptions * infant temperament) → Child-centered coparenting	.02	.01	.16	-.07, .39
(Father perceptions * infant temperament) → Mother warmth	**-.05**	**.03**	**-.21***	**-.40, -.01**
(Father perceptions * infant temperament) → Father warmth	-.03	.03	-.12	-.31, .07
(Father perceptions * infant temperament) → Child-centered coparenting	-.03	.03	-.13	-.40, .13
Mother warmth → Child-centered coparenting	**.27**	**.08**	**.31*****	**.15, .47**
Father warmth → Child-centered coparenting	**.25**	**.08**	**.31*****	**.12, .49**
Controls:				
Family income (8 mo.) → Mother perceptions	**.89**	**.31**	**.30*****	**.12, .48**
Family income (8 mo.) → Father perceptions	**.53**	**.24**	**.27***	**.05, .49**
Family income (24 mo.) → Mother warmth	.04	.08	.05	-.14, .25
Family income (24 mo.) → Father warmth	-.09	.09	-.10	-.31, .11
Family income (24 mo.) → Child-centered coparenting	.02	.07	.02	-.18, .23
Mother education → Mother perceptions	-.09	.24	-.03	-.18, .13
Father education → Father perceptions	-.20	.17	-.10	-.26, .06
Mother education → Mother warmth	.07	.08	.08	-.13, .29
Father education → Father warmth	.07	.10	.09	-.14, .31

(Table 18 – continued)

Mother education → Child-centered coparenting	-.002	.08	-.003	-.24, .23
Father education → Child-centered coparenting	.05	.06	.08	-.10, .25

Note. Bold denotes significant paths.
† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 19
Tests of Mediation for Structural Equation Models Predicting Individual Parent Warmth and Child-centered Coparenting

	Mplus Estimate of Indirect Effects				Sobel Test	
Path	Indirect	95% CI Indirect	Direct	Total	Z	*p*
Mother perceptions → Mother warmth → Child-centered coparenting	**.09†**	**.002, .19**	**.04**	**.19**	**1.86**	**.06**
Mother perceptions → Father warmth → Child-centered coparenting	.06	-.04, .15	.04	.19	1.27	.20
Father perceptions → Mother warmth → Child-centered coparenting	.002	-.08, .08	-.01	.006	.04	.97
Father perceptions → Father warmth → Child-centered coparenting	.01	-.07, .10	-.01	.006	.32	.75
(Mother perceptions * Infant temperament) → Mother warmth → Child-centered coparenting	.04	-.03, .10	.16	.29**	1.09	.27
(Mother perceptions * Infant temperament) → Father warmth → Child-centered coparenting	**.09****	**.03, .16**	**.16**	**.29****	**2.20**	**.03**
(Father perceptions * Infant temperament) → Mother warmth → Child-centered coparenting	**-.07†**	**-.14, .009**	**-.13**	**-.23†**	**-1.60**	**.11**
(Father perceptions * Infant temperament) → Father warmth → Child-centered coparenting	-.04	-.09, .02	-.13	-.23†	-1.12	.26

Note. Bold paths highlight evidence for partial mediation. Standardized effects presented for Mplus estimates.
† $p < .10$, * $p < .05$. ** $p < .01$. *** $p < .001$.

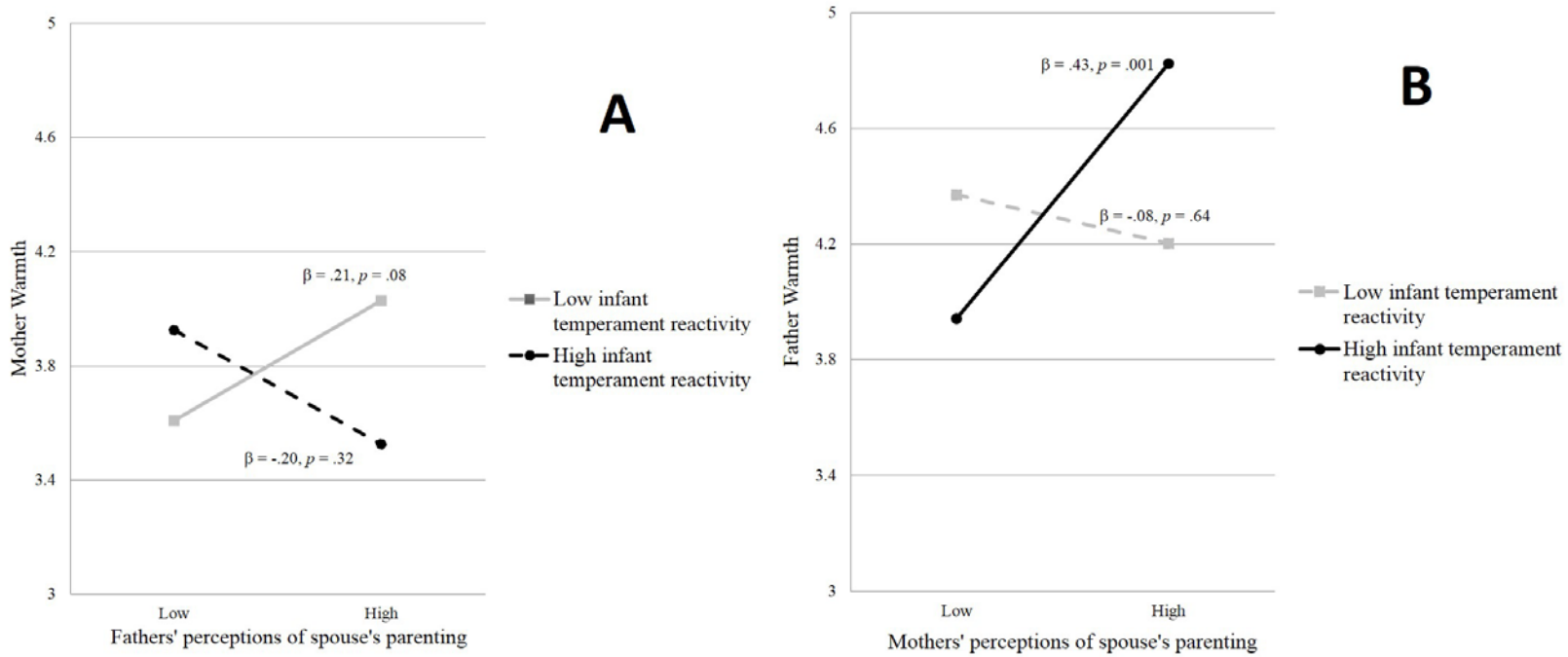

Figure 18.
Graphs of significant interactions in models with parents' warmth as a mediator and child-centered coparenting as outcome.
A. Interactions of infant temperament with fathers' perceptions predicting mothers' warmth.
B. Interactions of infant temperament with mothers' perceptions predicting fathers' warmth.
Solid lines denote significance.

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As shown in Figure 18A, simple slopes analyses demonstrated that when infant temperament was *more easygoing*, fathers' more positive perception of mothers' caregiving marginally predicted higher maternal warmth in coparenting (β = .21, p = .08), but when infants were *more challenging*, fathers' perceptions of mothers' parenting were unrelated to maternal warmth, β = -.20, p = .32. In contrast, as shown in Figure 19B, mothers' more positive perception of fathers' caregiving significantly predicted higher paternal warmth in coparenting when infant temperament was *more challenging* (β = .43, p < .001), but when infants were *more easygoing*, mothers' perceptions of fathers' parenting were unrelated to maternal warmth, β = -.08, p = .64.

As shown in Figure 17 and in Table 18, child-centered coparenting was positively associated with both mothers' (β = .31, p < .001) and fathers' warmth in coparenting (β = .31, p < .001), which provided support for Hypothesis 6. Mothers' perceptions of their spouse's coparenting were also predictive of their own warmth in coparenting (β = .30, p = .01), but the same did not emerge for fathers' perceptions and their own warmth, β = .05, p = .75.

As shown in Table 19, a marginally significant indirect effect emerged in support of Hypothesis 7, which suggested that parents' perceptions of their spouse's parenting would be indirectly associated with dyadic coparenting (in this model, child-centered coparenting) through parents' individual behaviors in coparenting (in this model, warmth). Mothers' perceptions of their spouse's parenting were indirectly influential on

greater child-centered coparenting through their own warmth in coparenting, $\beta_{indirect}$ = .09, p = .054.

For both parents, the interaction of parents' perceptions of their spouse's parenting with infant temperament also had an indirect effect on dyadic child-centered coparenting through their spouse's parent-to-child warmth. This also supported Hypothesis 7, which was that the association between the interaction of parents' perceptions of each others' parenting at 8 months with infant temperament and dyadic coparenting outcomes at 24 months would be mediated by parents' individual behaviors in coparenting. As shown in Table 19, a significant indirect effect emerged as the interaction of mothers' perceptions of fathers' parenting with infant temperament indirectly predicted greater child-centered coparenting through fathers' warmth in coparenting, $\beta_{indirect}$ = .09, p = .008. In addition, a marginally significant indirect effect emerged as the interaction of fathers' perceptions of their spouse's parenting with infant temperament indirectly predicted greater child-centered coparenting through mothers' warmth in coparenting, $\beta_{indirect}$ = -.07, p = .09. No support was found for Hypotheses 1-3 in this model.

In summary, infant temperament interacted with parents' perceptions of their spouses' parenting differently for mothers and fathers when influencing parents' behaviors in coparenting. Very little support emerged for direct effects of parents' perceptions on their spouse's individual or dyadic coparenting behaviors, or for indirect effects from interactions between temperament and parents' perceptions to individual coparenting behaviors to dyadic coparenting quality. Mothers' and fathers' individual

behaviors in coparenting also contributed to their dyadic coparenting qualities in different ways.

Parent Gender Path Differences

Tables 20-22 shows the tests of parent gender path differences in models grouped by the three individual coparenting mediators, involvement, support, and warmth (respectively), with subsequent path pairs controlling for previous pairs.

Models with parental involvement as a mediator. As shown in Table 20, in the three models in which parent involvement was a mediator (Figures 3, 4, and 6), several differences emerged in parent gender paths. In each of these three models, a significant difference in parent gender paths emerged in the effects of parents' perceptions of each other's parenting on each other's individual involvement (partner effects; with competitive coparenting as an outcome, $\chi^2[1] = 4.55$, $p = .03$; with cooperative coparenting as an outcome, $\chi^2[1] = 4.55$, $p = .04$; with child-centeredness as an outcome, $\chi^2[1] = 2.93$, $p = .09$). As shown in Tables 2, 4, and 6, and in Figures 3, 4, and 6, mothers' perceptions were positively associated with father involvement ($\beta = .17$, $p = .26$), and fathers' perceptions were negatively associated with mothers' involvement ($\beta = -.05$, $p = .70$), but neither path was significant.

A significant difference also emerged in the effects of the interaction of parents' perceptions with infant temperament on parents' own individual involvement (actor effects; with competitive coparenting as an outcome, $\chi^2[1] = 9.63$, $p = .002$; with cooperative coparenting as an outcome, $\chi^2[1] = 8.95$, $p = .003$; with child-centeredness as

Table 20

Moderation Effects of Parent Gender on Model Paths with Parent Involvement as a Mediator

Constrained path pair steps	$\chi^2(df)$	χ^2 difference test and *p*-values
Individual involvement and dyadic competitive coparenting		
1. None (model paths unconstrained)	23.17 (15)	--
2. Parents' perceptions ➔ Individual involvement (actor effects)	23.09 (16)	.35 (1), $p = .55$
3. Parents' perceptions ➔ Individual involvement (partner effects)	**25.71 (17)**	**4.55 (1), $p = .03$**
4. Parents' perceptions ➔ Dyadic competitive coparenting	25.32 (18)	.001 (1), $p = .99$
5. Infant temperament ➔ Individual involvement	25.88 (19)	.001 (1), $p = .97$
6. (Parents' perceptions * infant temperament) ➔ Individual involvement (actor effects)	**28.65 (20)**	**9.63 (1), $p = .002$**
7. (Parents' perceptions * infant temperament) ➔ Individual involvement (partner effects)	29.14 (21)	.03 (1), $p = .86$
8. (Parents' perceptions * infant temperament) ➔ Dyadic competitive coparenting	29.92 (22)	.005 (1), $p = .94$
9. Individual involvement ➔ Dyadic competitive coparenting	31.37 (23)	1.49 (1), $p = .22$
Individual involvement and dyadic cooperative coparenting		
1. None (model paths unconstrained)	12.31 (15)	--
2. Parents' perceptions ➔ Individual involvement (actor effects)	12.51 (16)	.35 (1), $p = .55$
3. Parents' perceptions ➔ Individual involvement (partner effects)	**14.65 (17)**	**4.45 (1), $p = .04$**
4. Parents' perceptions ➔ Dyadic cooperative coparenting	14.82 (18)	.02 (1), $p = .89$
5. Infant temperament ➔ Individual involvement	15.12 (19)	.002 (1), $p = .96$
6. (Parents' perceptions * infant temperament) ➔ Individual involvement (actor effects)	**17.35 (20)**	**8.95 (1), $p = .003$**
7. (Parents' perceptions * infant temperament) ➔ Individual involvement (partner effects)	17.63 (21)	.01 (1), $p = .91$
8. (Parents' perceptions * infant temperament) ➔ Dyadic cooperative coparenting	**22.57 (22)**	**7.35 (1), $p = .007$**
9. Individual involvement ➔ Dyadic cooperative coparenting	23.23 (23)	.61 (1), $p = .43$

(Table 20 – continued)

Individual involvement and dyadic child-centered coparenting		
1. None (model paths unconstrained)	13.12 (15)	--
2. Parents' perceptions ➔ Individual involvement (actor effects)	13.28 (16)	.33 (1), p = .57
3. Parents' perceptions ➔ Individual involvement (partner effects)	**15.44 (17)**	**4.44 (1), p = .04**
4. Parents' perceptions ➔ Dyadic child-centered coparenting	15.55 (18)	.10 (1), p = .75
5. Infant temperament ➔ Individual involvement	15.88 (19)	.002 (1), p = .96
6. (Parents' perceptions * infant temperament) ➔ Individual involvement (actor effects)	**18.31 (20)**	**11.28 (1), p = .001**
7. (Parents' perceptions * infant temperament) ➔ Individual involvement (partner effects)	18.58 (21)	.002 (1), p = .97
8. (Parents' perceptions * infant temperament) ➔ Dyadic child-centered coparenting	**26.08 (22)**	**220.41 (1), p < .001**
9. Individual involvement ➔ Dyadic child-centered coparenting	27.52 (23)	1.47 (1), p = .23

Note. Models are nested stepwise in that a given step includes current constraints and constraints imposed in previous steps. Bold denotes significant differences across groups (p < .10). Parents' perceptions = parents' perceptions of their spouse's parenting. Satorra-Bentler method used for correcting Chi-square differences from multiple imputation with robust standard errors (MLR).

an outcome, $\chi^2[1] = 11.28$, $p = .001$). Here, the influence of the interaction of mothers' perceptions with infant temperament on mothers' involvement was negatively valenced ($\beta = -.02$, $p = 88$ for competitive and cooperative coparenting; $\beta = -.03$, $p = .84$ for child-centeredness), while that of fathers' perceptions with infant temperament on fathers' involvement was positively valenced ($\beta = .13$, $p = .17$), but neither of these paths were significant.

There were also significant gender differences in the impact of the interaction of parents' perceptions with infant temperament on dyadic cooperative coparenting ($\chi^2[1] =$

7.35, $p = .007$) and child-centered coparenting, $\chi^2(1) = 220.41$, $p < .001$. As shown in Table 4 and Figure 4, the interaction of mothers' perceptions with infant temperament was not significantly associated with cooperative coparenting ($\beta = .21$, $p = .11$), but the interaction of fathers' perceptions with infant temperament was significantly associated with cooperative coparenting, $\beta = -.25$, $p = .004$. Figure 5 demonstrates the simple slopes for this interaction. As shown in Table 6 and Figure 6, child-centered coparenting was significantly associated with the interactions of mothers' perceptions with infant temperament ($\beta = .30$, $p = .009$) and with fathers' perceptions with infant temperament, $\beta = -.27$, $p = .02$. Figure 7 demonstrates the simple slopes for these interactions.

Models with parent support as a mediator. As shown in Table 21, in the three models in which parent support was a mediator (Figures 8, 9 and 11), several differences emerged in parent gender paths. In these three models, a significant difference in parent gender paths emerged in the effects of infant temperament on parents' individual support (with competitive coparenting as an outcome, $\chi^2[1] = 5.04$, $p = .03$; with cooperative coparenting as an outcome, $\chi^2[1] = 5.32$, $p = .02$; with child-centeredness as an outcome, $\chi^2[1] = 5.92$, $p = .02$). As shown in Tables 8, 10, and 12 and Figures 8, 9, and 11, infant temperament was positively predictive of mother support, ($\beta = .23$, $p = .04$), but not of father support, $\beta = -.04$, $p = .68$.

There were also significant gender differences in the impact of the interaction of parents' perceptions with infant temperament on dyadic cooperative coparenting ($\chi^2[1] = 6.31$, $p = .01$) and child-centered coparenting, $\chi^2(1) = 9.94$, $p = .002$. As shown in Table

Table 21
Moderation Effects of Parent Gender on Model Paths with Parent Support as a Mediator

Constrained path pair steps	$\chi^2(df)$	χ^2 difference test and *p*-values
Individual support and dyadic competitive coparenting		
1. None (model paths unconstrained)	27.81 (15)	--
2. Parents' perceptions ➔ Individual support (actor effects)	27.31 (16)	.32 (1), $p = .57$
3. Parents' perceptions ➔ Individual support (partner effects)	27.31 (17)	.25 (1), $p = .62$
4. Parents' perceptions ➔ Dyadic competitive coparenting	27.76 (18)	.001 (1), $p = .99$
5. Infant temperament ➔ Individual support	**32.77 (19)**	**5.04 (1), $p = .03$**
6. (Parents' perceptions * infant temperament) ➔ Individual support (actor effects)	32.45 (20)	.61 (1), $p = .44$
7. (Parents' perceptions * infant temperament) ➔ Individual support (partner effects)	32.65 (21)	.07 (1), $p = .80$
8. (Parents' perceptions * infant temperament) ➔ Dyadic competitive coparenting	33.96 (22)	.90 (1), $p = .34$
9. Individual support ➔ Dyadic competitive coparenting	**37.04 (23)**	**2.93 (1), $p = .09$**
Individual support and dyadic cooperative coparenting		
1. None (model paths unconstrained)	21.87 (15)	--
2. Parents' perceptions ➔ Individual support (actor effects)	21.55 (16)	.31 (1), $p = .58$
3. Parents' perceptions ➔ Individual support (partner effects)	21.58 (17)	.25 (1), $p = .62$
4. Parents' perceptions ➔ Dyadic cooperative coparenting	21.95 (18)	.01 (1), $p = .91$
5. Infant temperament ➔ Individual support	**27.28 (19)**	**5.32 (1), $p = .02$**
6. (Parents' perceptions * infant temperament) ➔ Individual support (actor effects)	27.13 (20)	.58 (1), $p = .45$
7. (Parents' perceptions * infant temperament) ➔ Individual support (partner effects)	27.31 (21)	.08 (1), $p = .78$
8. (Parents' perceptions * infant temperament) ➔ Dyadic cooperative coparenting	**30.82 (22)**	**6.31 (1), $p = .01$**
9. Individual support ➔ Dyadic cooperative coparenting	**35.45 (23)**	**6.13 (1), $p = .01$**

(Table 21 – continued)

Individual support and dyadic child-centered coparenting		
1. None (model paths unconstrained)	23.11 (15)	--
2. Parents' perceptions ➔ Individual support (actor effects)	22.71 (16)	.31 (1), p = .58
3. Parents' perceptions ➔ Individual support (partner effects)	22.72 (17)	.25 (1), p = .62
4. Parents' perceptions ➔ Dyadic child-centered coparenting	23.04 (18)	.21 (1), p = .65
5. Infant temperament ➔ Individual support	**28.63 (19)**	**5.92 (1), p = .02**
6. (Parents' perceptions * infant temperament) ➔ Individual support (actor effects)	28.43 (20)	.58 (1), p = .45
7. (Parents' perceptions * infant temperament) ➔ Individual support (partner effects)	28.63 (21)	.07 (1), p = .79
8. (Parents' perceptions * infant temperament) ➔ Dyadic child-centered coparenting	**33.40 (22)**	**9.94 (1), p = .002**
9. Individual support ➔ Dyadic child-centered coparenting	34.25 (23)	.91 (1), p = .34

Note. Models are nested stepwise in that a given step includes current constraints and constraints imposed in previous steps. Bold denotes significant differences across groups ($p < .10$). Parents' perceptions = parents' perceptions of their spouse's parenting. Satorra-Bentler method used for correcting Chi-square differences from multiple imputation with robust standard errors (MLR).

10 and Figure 9, the interaction of fathers' perceptions with infant temperament had a marginally significant interactive effect on cooperative coparenting (β = -.19, p = .06), but the interaction of mothers' perceptions with infant temperament did not have a significant interactive effect on cooperative coparenting, β = .18, p = .11. Figure 10B demonstrates the simple slopes for this interaction with father's perceptions. In addition, as shown in Table 12 and Figure 11, the interaction of mothers' perceptions with infant temperament had a significant interactive effect on child-centered coparenting (β = .27, p = .02), but the interaction of fathers' perceptions with infant temperament did not have a

significant interactive effect on child-centered coparenting, β = -.21, *p* = .12. Figure 12B demonstrates the simple slopes for this interaction with father's perceptions.

Lastly, there were gender differences in the associations of parents' individual support with dyadic competitive ($\chi^2[1] = 2.93$, *p* = .09) and cooperative coparenting, $\chi^2(1) = 6.13$, *p* = .01. As shown in Table 8 and Figure 8, mother support was significantly negatively associated with competitive coparenting (β = -.47, *p* < .001), but father support was not, β = -.03, *p* = .83. In contrast, as shown in Table 10 and Figure 9, father support was significantly positively associated with cooperative coparenting (β = .34, *p* = .01), but mother support was not, β = -.02, *p* = .86.

Models with parental warmth as a mediator. As shown in Table 22, in the three models in which parent warmth was a mediator (Figures 13, 15, and 17), several significant gender differences emerged. In the three models, a significant difference in parent gender paths emerged in the effects of the interaction of parents' perceptions with infant temperament on parents' individual warmth (partner effects; with competitive coparenting as an outcome, $\chi^2[1] = 4.35$, *p* = .04; with cooperative coparenting as an outcome, $\chi^2[1] = 4.07$, *p* = .04; with child-centeredness as an outcome, $\chi^2[1] = 4.10$, *p* = .04).

As shown in Tables 14, 16, and 18 and Figures 13, 15, and 17, the interaction of mothers' perceptions with infant temperament had a significant interactive effect on fathers' warmth, (β = .31, *p* = .005), and the interaction of fathers' perceptions with infant temperament had a significant interactive effect on mothers' warmth, β = -.21, *p* = .04.

Table 22
Moderation Effects of Parent Gender on Model Paths with Parent Warmth as a Mediator

Constrained path pair steps	$\chi^2(df)$	χ^2 difference test and *p*-values
Individual warmth and dyadic competitive coparenting		
1. None (model paths unconstrained)	22.19 (15)	--
2. Parents' perceptions ➔ Individual warmth (actor effects)	22.77 (16)	.65 (1), $p = .42$
3. Parents' perceptions ➔ Individual warmth (partner effects)	23.12 (17)	.09 (1), $p = .76$
4. Parents' perceptions ➔ Dyadic competitive coparenting	23.08 (18)	.01 (1), $p = .91$
5. Infant temperament ➔ Individual warmth	24.10 (19)	.84 (1), $p = .36$
6. (Parents' perceptions * infant temperament) ➔ Individual warmth (actor effects)	25.96 (20)	2.36 (1), $p = .12$
7. (Parents' perceptions * infant temperament) ➔ Individual warmth (partner effects)	**30.67 (21)**	**4.35 (1), $p = .04$**
8. (Parents' perceptions * infant temperament) ➔ Dyadic competitive coparenting	31.99 (22)	1.14 (1), $p = .29$
9. Individual warmth ➔ Dyadic competitive coparenting	32.47 (23)	.41 (1), $p = .52$
Individual warmth and dyadic cooperative coparenting		
1. None (model paths unconstrained)	13.06 (15)	--
2. Parents' perceptions ➔ Individual warmth (actor effects)	13.69 (16)	.64 (1), $p = .42$
3. Parents' perceptions ➔ Individual warmth (partner effects)	13.94 (17)	.09 (1), $p = .77$
4. Parents' perceptions ➔ Dyadic cooperative coparenting	14.14 (18)	.04 (1), $p = .84$
5. Infant temperament ➔ Individual warmth	14.92 (19)	.78 (1), $p = .38$
6. (Parents' perceptions * infant temperament) ➔ Individual warmth (actor effects)	16.52 (20)	2.27 (1), $p = .13$
7. (Parents' perceptions * infant temperament) ➔ Individual warmth (partner effects)	**20.99 (21)**	**4.07 (1), $p = .04$**
8. (Parents' perceptions * infant temperament) ➔ Dyadic cooperative coparenting	**23.23 (22)**	**2.85 (1), $p = .09$**
9. Individual warmth ➔ Dyadic cooperative coparenting	23.52 (23)	.23 (1), $p = .63$

(Table 22 – continued)

Individual warmth and dyadic child-centered coparenting		
1. None (model paths unconstrained)	15.99 (15)	--
2. Parents' perceptions ➔ Individual warmth (actor effects)	16.61 (16)	.66 (1), p = .42
3. Parents' perceptions ➔ Individual warmth (partner effects)	16.89 (17)	.10 (1), p = .76
4. Parents' perceptions ➔ Dyadic child-centered coparenting	16.85 (18)	.04 (1), p = .85
5. Infant temperament ➔ Individual warmth	17.72 (19)	.81 (1), p = .37
6. (Parents' perceptions * infant temperament) ➔ Individual warmth (actor effects)	19.35 (20)	2.16 (1), p = .14
7. (Parents' perceptions * infant temperament) ➔ Individual warmth (partner effects)	**23.93 (21)**	**4.10 (1), p = .04**
8. (Parents' perceptions * infant temperament) ➔ Dyadic child-centered coparenting	**26.40 (22)**	**3.28 (1), p = .07**
9. Individual warmth ➔ Dyadic child-centered coparenting	26.43 (23)	.02 (1), p = .88

Note. Models are nested stepwise in that a given step includes current constraints and constraints imposed in previous steps. Bold denotes significant differences across groups ($p < .10$). Parents' perceptions = parents' perceptions of their spouse's parenting. Satorra-Bentler method used for correcting Chi-square differences from multiple imputation with robust standard errors (MLR).

Figures 14, 16A, 16B, and 18 show the simple slopes for these interactions. There were also marginal gender differences in the impact of the interaction of parents' perceptions with infant temperament on dyadic cooperative coparenting ($\chi^2[1] = 2.85$, $p = .09$) and on child-centered coparenting, $\chi^2(1) = 3.28$, $p = .07$. As shown in Table 16 and Figure 15, the interaction of fathers' perceptions with infant temperament had a marginally significant interactive effect on cooperative coparenting ($\beta = -.17$, $p = .09$), but the interaction of mothers' perceptions with infant temperament did not have a significant interactive effect on cooperative coparenting, $\beta = .12$, $p = .39$. Figure 16C demonstrates

the simple slopes for this interaction with father's perceptions. On the other hand, as shown in Table 18 and Figure 17, the interaction of mothers' perceptions with infant temperament had a positive association with child-centered coparenting ($\beta = .16$, $p = .18$), and the interaction of fathers' perceptions with infant temperament had a negative association with child-centered coparenting, ($\beta = -.13$, $p = .33$), but neither interaction significantly predicted child-centered coparenting.

In summary, most of the gender differences in predicting parents' coparenting behaviors were found for the interactive effects of parents' perceptions and infant temperament. This was especially true for partner effects of these interactions on the parents' behavior during coparenting more so than for actor effects. Gender differences were also found between paths modelling the relation of each parents' individual coparenting behaviors to dyadic coparenting quality.

Alternative Models

Figure 2 shows the alternative model framework. In each of the nine alternative model tests, infant temperament did not significantly predict mothers' or fathers' perceptions of their spouse's parenting. In addition, no significant indirect effects emerged with infant temperament as a predictor. Tables showing the complete results for these models are available from the author on request.

Discussion

The goal of this project was to explore how parents' perceptions of each other's parenting interact with infant temperament to predict parents' later individual and dyadic coparenting behaviors. I expected that the most positive outcomes of parents' individual behaviors in coparenting (i.e., greater involvement, support, and warmth) and of their dyadic coparenting (i.e., high cooperative and child-centered coparenting, low competitive coparenting) at 24 months postpartum would be predicted by parents' more positive perceptions of their spouse's parenting at 8 months postpartum, and by having infants with more easygoing temperaments. I also expected that these associations would be qualified by significant interactions between parents' perceptions and infant temperament, and that more positive individual coparenting behaviors (e.g., high involvement, support, and parent-to-child warmth) would mediate the relation between the 8-month predictors of individual coparenting behaviors and dyadic coparenting quality at 24 months.

However, results revealed very few main effects of either parents' perceptions or infant temperament across models. Instead, results indicated that across all models, not only were most of the significant effects based on interactions between infant temperament and parents' perceptions of their spouses' parenting predicting to individual and dyadic coparenting, but interestingly, mothers' perceptions and fathers' perceptions interacted with temperament in very different ways. For example, in the model predicting dyadic child-centered coparenting with individual parental warmth as a mediator, mothers' more positive perceptions of fathers' parenting interacted with

greater infant temperament reactivity to predict higher levels of father warmth, whereas fathers' more positive perceptions of mothers' parenting interacted with *lower* infant temperament reactivity to associate with higher levels of mother warmth. Results will be discussed by examining support for each hypothesis holistically, across all nine models, and then by integrating the overall findings to discuss parent gender differences in relation to the existing literature.

Main Effects of Parents' Perceptions and Infant Temperament on Coparenting

I hypothesized that each parents' more positive perceptions of their spouse's parenting at 8 months would be directly associated with higher levels of spouse's individual warmth, support, and involvement in coparenting at 24 months (Hypothesis 1), and with less competitive and more cooperative and child-centered dyadic coparenting (Hypothesis 2). I also expected that mothers' perceptions of fathers' parenting would predict individual and dyadic coparenting more that fathers' opinions of mothers, since mothers have been shown to have a greater impact on fathers' parenting than vice-versa (e.g., Schoppe-Sullivan et al., 2008; Waller, 2012). However, only very limited support for these hypotheses was found. Support for my first hypothesis was limited to models with individual support in coparenting as a mediator, in which mothers' higher perceptions of their spouse's parenting were marginally associated with greater fathers' support in coparenting. This is consistent the literature on maternal gatekeeping, as fathers who are perceived more positively by their spouse may feel more encouraged to participate in coparenting with their spouse. No support was found for Hypothesis 2, perhaps because parents' perceptions of their spouse's parenting may be based more on

their spouse's individual behaviors during caregiving, rather than on the couples' dyadic caregiving quality. It is important to also note that these main effects were tested simultaneously with interactive effects with infant temperament (discussed below), so the potential for main effects was qualified by interactive effects, also discussed below.

More reactive (i.e., challenging) infant temperament reactivity was also expected to directly predict parents' individual lower involvement, support, and warmth in coparenting, as well as lower dyadic coparenting quality (Hypothesis 3). Contrary to expectations, more reactive infant temperament was found to be directly related to *higher*, rather than lower, maternal support of fathers' parenting. Tests of differences in gender pathways also demonstrated that mothers and fathers significantly differed in how their support in coparenting was influenced by infant temperament, such that more reactive infant temperament was predictive of higher mothers' support of fathers, but not of fathers' support of mothers. However, in several models, the relation of maternal coparenting to greater temperamental reactivity was qualified by a significant interaction between fathers' perceptions of fathers and infant temperament, which will be discussed below. Overall, then, it appears that parents' perceptions interact with infant temperament to predict parents' individual coparenting behaviors and dyadic coparenting quality, rather than showing independent main effects.

Interactions of Parents' Perceptions with Infant Temperament on Coparenting

I hypothesized that direct relations between parents' perceptions and individual coparenting (Hypothesis 4) and between parents' perceptions and dyadic coparenting

(Hypothesis 5) would be qualified by significant interactions with infant temperament. As noted above, this was largely supported.

In support of Hypothesis 4, both parents' warmth and fathers' support were predicted by the interaction of parents' perceptions and temperament. However, tests of differences in gender pathways indicated that mothers and fathers significantly differed in how the interactive effects of their perceptions and infant temperament influenced their partners' warmth. Specifically, when infants were more reactive, mothers' more positive perceptions of fathers predicted higher father warmth toward the child during caregiving. In contrast, fathers' more positive perceptions of mothers predicted mothers' higher warmth only when infants were more easygoing. Fathers' support was predicted by the interaction of fathers' perceptions of mothers and infant temperament for models in which cooperative coparenting was the dependent variable. Specifically, fathers' support was highest when fathers had more negative perceptions of mothers' caregiving, and when their infant's temperament was challenging.

A similar pattern was found in a few models predicting dyadic cooperative and child-centered coparenting, supporting Hypothesis 5. Again, tests of differences in gender pathways indicated that mothers and fathers significantly differed in how the interactive effects of their perceptions and infant temperament influenced their partners' cooperative and child-centered coparenting, although significant gender differences were not found for competitive coparenting. Specifically, mothers' more positive perceptions of fathers predicted higher levels of dyadic child-centered coparenting in the models with involvement and support as mediators, but only when infants were more temperamentally

challenging. In contrast, fathers' more positive perceptions predicted higher levels of cooperative and child-centered coparenting, but only when their infant's temperament was easygoing. These interaction patterns will be interpreted below, in conjunction with indirect effects involving interactions between parents' perceptions and infant temperament.

Relations between Individual Behaviors in Coparenting and Dyadic Coparenting Quality

Strong support was found in across the nine models for Hypothesis 6, which stated that higher levels of mothers' and fathers' support in coparenting and warmth toward their child would be associated with higher dyadic cooperative and child-centered coparenting and lower competitive coparenting, and that higher involvement of fathers would be related to higher cooperative and child-centered coparenting and lower competitive coparenting, since maternal involvement in coparenting is less likely to vary. As expected, both mothers' and fathers' greater warmth in coparenting was associated with greater dyadic child-centered coparenting, but contrary to expectation, neither parents' support of the others' parenting was related to child-centered coparenting. Greater individual parent-to-child warmth would presumably contribute to greater child-centered coparenting, as both parents are contributing to meeting their child's needs when they show greater warmth towards their child (e.g., McHale, Kuersten-Hogan, Lauretti, & Rasmussen, 2000). However, child-centered coparenting may be more reflected in parents' warmth towards their child versus their support towards each other.

As expected, based in part on previous research with this data set (Murphy et al., 2017), mothers' greater support and warmth in coparenting were associated with lower dyadic competitive coparenting (but not with greater cooperative coparenting), whereas fathers' greater support and warmth were associated with greater cooperative coparenting (but not lower competitive coparenting). In fact, significant differences in gender pathways were found in how mothers' and fathers' individual support (but not warmth) related to dyadic competitive and cooperative coparenting. These results suggest that mothers may be more influential than fathers in establishing a competitive coparenting dynamic through undermining of the fathers' parenting. This is consistent with previous research (e.g., Schoppe-Sullivan et al., 2008, 2015), indicating that mothers demonstrate more "gatekeeping" behavior in coparenting and show less support and more criticism of their spouse's parenting, compared to fathers, and maternal undermining of fathers' parenting is, in turn, related to competitive coparenting.

In contrast, fathers' support of mothers' parenting may contribute more to a cooperative coparenting dynamic. This is consistent with past studies indicating that higher levels of paternal involvement and support in coparenting have been found to relate to more positive family dynamics and child outcomes (Coltrane & Shih, 2009; Ehrenberg et al., 2001), perhaps because fathers are less likely to undermine mothers' caregiving but also less likely to be involved in parenting of infants and toddlers.

Also as expected based on past research with this data set (Murphy et al., 2017), fathers' (but not mothers') greater involvement in coparenting was associated with greater dyadic cooperative and child-centered coparenting and with less competitive

coparenting. Greater involvement by fathers (but not mothers) was expected to relate to more positive coparenting quality since past research has found that father involvement in caregiving of infants and toddlers is much more variable than mother involvement, which is generally high (Kotila et al., 2013), and increased father involvement has been found to relate to greater mutual support in the coparenting relationship (Jia & Schoppe-Sullivan, 2011).

Indirect Effects

Finally, I hypothesized that parents' individual behaviors in coparenting—their involvement, their support of their spouse, and their warmth toward the child—would mediate the relations between parents' perceptions of each other's parenting and dyadic coparenting quality (Hypothesis 7), as well the relation between the interaction of parent's perceptions and temperament and dyadic coparenting quality. Limited support was found for Hypothesis 7: Specifically, the interactions of both mothers' and fathers' perceptions with infant temperament each separately predicted higher child-centered coparenting indirectly through their partners' warmth in coparenting. As with the previously mentioned interactive effects predicting individual behaviors in coparenting and dyadic coparenting, opposite patterns of interactions were found for mothers and fathers. Specifically, when infants were more challenging, mothers' more positive perceptions of their spouse's parenting predicted fathers' higher warmth, which in turn predicted higher dyadic child-centered coparenting. In contrast, when infants were more easygoing, fathers' positive perceptions of their spouse's parenting predicted maternal warmth, which in turn predicted more child-centered coparenting.

In addition, mothers' more positive perceptions of fathers' parenting were indirectly predictive of dyadic child centeredness through mothers' own warmth. No significant gender difference, however, was found in parents' perceptions of their spouse's parenting as predictors of their own individual coparenting behaviors. Mothers who perceive their spouse positively may be involved in higher dyadic child-centeredness with their spouse while showing high warmth toward their child, as these mothers may be showing warmth towards both their child and their spouse. In this study, fathers perceived mothers more positively than vice-versa and with smaller variance for fathers' perceptions than for mothers' perceptions, so the results here may demonstrate that mothers' may also be more variable in their warmth than fathers as a function of their perceptions of their spouse.

The Role of Infant Temperament in Understanding Gender Differences in Coparenting

Why might it be that, in general, higher quality patterns of individual and dyadic behavior in coparenting were predicted by mothers' more positive perceptions of fathers when infants were *more challenging*, but were predicted by fathers' more positive perceptions of mothers when infants were *more easygoing*? For example, regarding each parents' support of the other parent during coparenting, when infants were temperamentally challenging, fathers who had more positive perceptions of their wives' parenting provided *less* support during coparenting, and the cooperative coparenting of these couples was high (perhaps at least in part because of increased paternal support).

However, when infants were more easygoing, the amount of support fathers provided was unrelated to their perceptions of their spouse's parenting or to cooperative coparenting.

Coparenting of a challenging child. These findings may seem paradoxical, but given that fathers are seldom the primary caregivers of infants and toddlers, a father may feel less inclined to offer support during coparenting of a more challenging, temperamentally reactive infant if he believes his wife is a doing a great job as a parent. "Oh, she's a great mom; I'll let her handle the crying baby." He may feel that she would do a better job dealing with their child's challenging temperament than he would, particularly since a child with a challenging temperament may be more inclined to cry and fuss when being cared for by someone other than the primary caregiver. Also, when infants are more challenging and both parents believe that the mother is the more competent parent, the mother may be more critical and undermining of the father's parenting, such that fathers may feel less comfortable interacting with their child. It is easy to imaging a scenario in which a father ineffectively tries to comfort a screaming baby, the mother rushes over and says, "Let me do it," and the father is relieved to have the mother take over.

However, if a father is less positive about his wife's parenting skills and believes that she is struggling to care for their challenging child, he might offer more support. This is likely to be particularly true when a mother has a very positive perception of her husband's parenting, given that mothers' more positive perceptions of their husband's parenting also predicted his later support during coparenting. Moreover, findings of the present study also indicate that when infants are challenging, mothers' more positive

perceptions of fathers predict higher father warmth with their child, as well as higher cooperative and child-centered caregiving. Positive maternal endorsement of a father's parenting of a challenging infant may raise his confidence in his parenting and his warmth with his child, which in turn relate to greater cooperative and child-centered coparenting. In addition, mothers with higher perceptions of the fathers' parenting at 8 months are likely to engage in less gatekeeping, thus promoting fathers' warm engagement with their challenging child. This parallels prior research suggesting that parents' perceptions of their coparenting relationship quality are higher when mothers demonstrated high levels of encouragement for fathers (Schoppe-Sullivan et al., 2008). Prior research also demonstrates that proactive gate opening is demonstrated in families when they demonstrate a cycle in which fathers appreciate support, endorse mothers as good mothers, and endorse maternal role security while eliciting further support (Trinder, 2008).

Overall then, when a couple has a challenging child, greater father warmth and greater cooperative and child-centered coparenting are more likely when the mother has a more positive view of the father's parenting, but the father has a *less* positive view of the mother's parenting. How is it that fathers' negative perceptions of their spouse's parenting may be beneficial to coparenting? Although this may seem paradoxical, it is important to keep in mind that fathers generally have more positive perceptions of mothers' parenting than mothers' have of fathers' parenting, both in this study and in past research (e.g., Margolin et al., 2001; Sasaki et al., 2010; Schoppe-Sullivan et al., 2015). Thus, most fathers have very high perceptions of mothers' parenting, whereas mother's

perceptions of fathers' parenting are more mixed and variable. Accordingly, when fathers' perceptions of mothers are more negative, they are not likely to be negative in an absolute sense (i.e., viewing the mother as a "bad parent"), but are perhaps more mixed (e.g., viewing the mother as a generally competent parent who struggles at times and needs help).

Thus, when a child is challenging, warm father involvement and cooperative and child-centered coparenting may be most likely when the father perceives that mother is not a perfect parent and needs his help with their challenging child, and the mother is a gate-opener who wants help and perceives her husband as a competent caregiver. In this case, both parents pull together to support each other with the challenging child, and both parents view the father as a competent and important caregiver. This finding is consistent with the research finding that for couples with a challenging child, coparenting quality is higher if the parents have a mutually supportive relationship (Schoppe-Sullivan et al., 2007). However, if fathers think mothers are excellent caregivers who do not need their help, and mothers have a low opinion of father's caregiving, then mothers may be more inclined to engage in gatekeeping, and fathers might feel inclined to back out of coparenting the challenging child and let mothers take over, resulting in lower father warmth and lower cooperative and child-centered coparenting. When a child is challenging and both parents share a mutually supportive and positive relationship, parents might be more likely to demonstrate positive coparenting behaviors when mothers demonstrate gate-opening behaviors by asking fathers for help, thus further boosting fathers' confidence in their coparenting (Schoppe-Sullivan et al., 2008, 2015).

Coparenting of an easygoing child. When couples have a less temperamentally reactive, more easygoing child, a very different picture emerges of how mothers' and fathers' perceptions of their spouse's parenting relate to coparenting quality. In this situation, fathers' more positive perceptions of the mothers' parenting predicted higher maternal warmth, which in turn was associated with higher child-centered coparenting and lower competitive coparenting. In contrast, mothers' perceptions of fathers' parenting were unrelated to fathers' coparenting behaviors or to dyadic coparenting quality. Perhaps fathers perceive mothers who are warm at 8 months to be good parents, and maternal warmth persists or increases over time. However, it is less clear why this relation between fathers' more positive perceptions of mothers and mothers' higher warmth does not apply when infants are more challenging, and even trends in the opposite direction.

Perhaps when infants are more challenging, fathers may perceive warm mothers as less skilled parents, as they may attribute their child's negative affectivity to a warm and overly indulgent mother. That is, at 8 months, a warm mother may be quick to rush to comfort a crying child, and may often not be effective in stopping the crying. Fathers may then infer that warm mothers are spoiling the baby and are ineffective caregivers. Previous research suggests that parents, especially fathers, show more positive responses to children with easy-going temperaments (Putnam et al., 2002). More research, however, is needed to examine whether and when fathers attribute their infants' temperament quality to mothers' warm style of caregiving. For instance, prior research suggests that fathers' coparental mutuality is also predicted by maternal behavior during

mother-child interactions, fathers' marital satisfaction, and difficult infant temperament quality (Gordon & Feldman, 2008).

Mothers' perceptions of fathers' parenting may have less effect on fathers' individual behaviors in coparenting of a less reactive child, as fathers may be more motivated to engage in warm and positive interactions with a generally cheerful and easygoing child regardless of maternal support or undermining. In addition, fathers are less likely to feel that that their wives are struggling to care for an easygoing child, so a father's involvement and support during coparenting may be less related to his perceptions of his wife's ability to care for their child and more related to other factors, such as the demands of the current situation, his relationship with his wife and child, and maternal gatekeeping.

Strengths and Limitations

This study includes several strengths, as this dataset included observational and longitudinal data from both mothers and fathers and included triadic family interactions. Few longitudinal family datasets include data of the quality presented in this study. This study, however, has several limitations that should be considered in future research. First, both individual parents' and dyadic coparenting behaviors were assessed at 24 months within the same interaction. Therefore, true mediation of individual coparenting behaviors in the effect of parents' perceptions of their spouse's parenting on dyadic coparenting may be compromised. Given that the individual and dyadic coparenting qualities were coded from the same interactions, it should be noted that the possibility of overlap exists between and within both individual and dyadic coparenting qualities in this

study. To minimize overlap, each of the individual and dyadic coparenting variables were coded independently from one another are presented in separate models, versus presenting more than one type of individual and dyadic variable together in the same model. Another limitation is that I failed to control for the length of time that the couples were together. Time spent together might be a covariate regarding spouses' perceptions of each other.

The majority of the participants in this study were also of European American and middle-class backgrounds. Future research could compare these results to those among samples of families of different cultural and socioeconomic backgrounds, to examine whether and how coparenting strategies might differ from those in the families in this study. For instance, although I controlled for parents' income and education in this study, one could presume that, on average, a larger sample of lower-income families could demonstrate more negative coparenting outcomes, given previous research (Schoppe-Sullivan & Mangelsdorf, 2013). Families identifying with a variety of cultural backgrounds might show different results if parents base their parenting and coparenting strategies on different cultural practices. A larger sample size may also potentially offer greater statistical power for demonstrating significant effects that were shown as marginal in this study (e.g., interactive predictors of father support). However, it is important to remember that this dataset contained observational and longitudinal data from mothers and fathers and included triadic family interactions, which would be hard to collect on a larger scale.

Future Directions

Researchers should consider extending these results to explore how parents' perceptions interact with their child's temperament past infancy into early childhood to explore whether and how these interactions might demonstrate effects further into parenthood. For instance, how do mothers and/or fathers demonstrate continuity or change in their perceptions of each other's parenting and coparenting behaviors across their child's toddlerhood and early childhood, in conjunction with their child's regulation of emotions? Do these perceptions change when they introduce another child into their family, and if so, how? What other family system factors correlate with or predict this continuity versus change in their perceptions?

It would be interesting to examine how the results here could change as families progress into later childhood. For instance, the dynamics of coparenting might change with older children as fathers become more involved with family dynamics, especially with boys. Prior longitudinal research demonstrates that greater father involvement in play with four-year-old children is associated with an increase in supportive coparenting behavior and a decrease in undermining coparenting behavior one year later, and that fathers' involvement in play activities with boys (but not with girls) predicts reductions in undermining coparenting behavior one year later (Jia & Schoppe-Sullivan, 2011). Future research could also explore what child-centered coparenting looks like over time, in conjunction with cooperative and competitive coparenting. For instance, fathers might disagree later on with what they see is best for their child, potentially especially with their sons.

Future research should also consider how these results would replicate among families with stepparents, families of different sexual orientation backgrounds (e.g., lesbian, gay parents), larger families (e.g., influence of siblings), and families with divorced parents. Results of the present study were found during an in-home situation in which parents were feeding their child and changing their clothes. Researchers might also consider whether and how similar coparenting behaviors might be replicated across different coparenting scenarios than the ones presented in this study.

Finally, future research should test some of the speculations proposed in the present study to explain the gender differences in the patterns of interactions between parent's perceptions and infant temperament as predictors of individual and dyadic coparenting quality. In particular, it is important for researchers to understand why optimal patterns of individual and dyadic behavior in coparenting are predicted by mothers' more positive perceptions of fathers when their infants are *more challenging*, but are also predicted by fathers' more positive perceptions of mothers when infants are *more easygoing*. I proposed that these differences may be explained by gender role stereotypes about parenting competence held by both parents, but this idea should be tested in future studies.

Implications

This research has implications for parent educators and family therapists, as these results demonstrate that for parents who may wish to improve their coparenting behaviors across the transition to parenthood, it may be helpful to examine their perceptions of each other in regards to each other's parenting and how it pertains to their child's needs.

Coparenting qualities are associated with significant child outcomes, so it is important for parents to work together early in their transition to parenthood to establish a positive social-emotional climate in which they will raise their child.

Results of the present study show that coparenting quality rarely depends on direct effects of parents' perceptions of their spouse's parenting on their shared behaviors. Instead, coparenting quality depends on parents' perceptions coupled with their child's temperamental needs, as either challenging or easygoing, which differs based on the gender of the parent. As noted above, I proposed that that these gender differences in how parents' perceptions relate to coparenting outcomes might be explained by gender stereotypes regarding the parenting competence of mothers and fathers. Given the larger societal issue of gender typing of parental roles, and the presumption of mothers taking on most of the responsibilities of caregiving and household tasks in lieu of fathers' lower involvement in caregiving, parent educators and family therapists may need to help ameliorate mothers' and fathers' gender-typed perceptions of each other in conjunction with meeting their children's temperamental needs and establishing more cooperative, child-centered parenting patterns.

In conclusion, mothers' and fathers' early perceptions of their spouse's parenting are associated with their individual and dyadic parent- and child-centered behaviors in coparenting, albeit mainly in an interactive context with their infant's temperament. Mothers and fathers demonstrate optimal behaviors in coparenting in different ways when their spouse perceives them positively and depending on their infant's reactivity. When infants are highly reactive, coparenting is more optimal when mothers have higher

perceptions of fathers' parenting, but fathers have lower perceptions of mothers' parenting, making both of their perceptions of each others' parenting more equivalent and boosting their coparenting teamwork. However, when infants are more easygoing, coparenting was more optimal when fathers had more positive perceptions of mothers' parenting. The results from this study endorse prior notions about the role of maternal gatekeeping and fathers' behaviors in coparenting situations, but they also endorse contexts in which maternal gate-opening behaviors may promote fathers' behaviors in coparenting. Results also suggest that child-centered coparenting is a fruitful topic for further research.

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